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VACCINIAL ENCEPHALITIS

A Report of Three Cases, Two With Postmortem Examination*

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THE cerebrospinal complications of anti-smallpox vaccination have now been reported in sufficient numbers in the Continental, English and American medical literature to definitely designate the syndrome as vaccinial† (or post-vaccinal) encephalitis. The disease was first investigated in 1912 by Turnbull and McIntosh[1], although their report was not published until 1926. Continental cases were reported by Lucksch[2] from Czechoslovakia (Prague) in 1924 and by Bastiaanse[3] from Holland (The Hague) in 1925. Since then many cases have been observed, especially in Holland; a review of the important clinical literature up to 1930 will be found in the papers by Hassin and Geiger[4] and Flexner[5]‡.

In America the first fatal case, observed in 1924, was reported later by Wilson and Ford[6]. A second fatality was described by Hassin and Geiger[4] (1925-1926), a third by Wilson and Ford[6] and the fourth by Fulgham and Beykirch[7]. Two patients, both of whom recovered, are described by Wilson and Ford[6], and one, who also recovered, by Wolf and Brams[8]††. No cases have been reported in Canada[9]. To this brief list from the American literature the authors add three case reports.

CASE REPORTS

CASE 1. J. T., male, aged 6 years (St. Luke's Hospital, New Bedford, Mass. No. 86935), was vaccinated May 27, 1930, with a number of other children, including his younger sister (Case 2, C. T.). The child was apparently in good health until eleven days later (June 7), when he became drowsy and complained of headache. The vaccination wound had not given the child any trouble and appeared to be progressing in a normal manner to scab formation. On the *twelfth* day the child became stuporous and for the next two days the parents reported that he was quiet in bed with occasional attacks of "stiffening". At times there were jerky movements also of his arms.

The family history was unimportant. In the past the child had been perfectly healthy and medical attention had not been needed since birth.

The patient entered the hospital on the *fourteenth* day after vaccination (June 10), just after midnight. On examination he was drowsy; there was bilateral ptosis; tonic contractions of the muscles of the extremities; the fingers were folded over the thumbs; respirations were rapid and irregular; the pupils were equal, somewhat dilated and reacted to light; the tongue was coated, the lips cracked. There was no adenopathy; all the muscles of the neck were in moderate rigidity. Chest, lungs and abdomen were negative. The reflexes were not exaggerated and there was no Babinski sign, Kernig sign, or ankle clonus. The rigidity of the extremities was about equal on both sides.

A diagnosis of tetanus was made and tetanus antitoxin was given both intravenously and intraspinally. The child had no trismus on admission but, a few hours later, it became well marked. The spinal fluid contained 33 cells per c.mm., 50 per cent. polynuclears, and the test for globulin was faintly positive. The child died in the afternoon of the same day, the last temperature recorded being 102.5°F.

POSTMORTEM

GROSS FINDINGS

Negative except for fully developed vaccine pock and slight hyperemia and edema of meninges.

MICROSCOPICAL EXAMINATION

Lung: Slight congestion. Otherwise negative.

Spleen: Scattered polymorphonuclear leucocytes in pulp.

Pancreas: Some postmortem change.

Liver: Negative.

Thyroid: Negative.

Skin: Surface epithelium eroded over most of section of vaccination scar. At either side of the ulcerated area the epithelium is divided into two layers by edematous fluid, separating the basal layer from the cornified epithelium. Beneath the epithelium at these points are slight foci of lymphocytic infiltration and scattered mononuclear leucocytes. The skin in the bulk of the section, however, is covered by a coagulum consisting chiefly of amorphous material, polymorphonuclear leucocytes, lymphocytes and mononuclear leucocytes. At a few points there are remnants of epithelium over the upper layers of the corium; these are too poorly preserved to detect the presence of vaccinia bodies. The corium is edematous and infiltrated, particularly about the smaller vessels, with mononuclear leucocytes, lymphocytes and scattered polymorphonuclear leucocytes. Some of the endothelial leucocytes are vacuolated. In the underlying fat there are several foci of necrosis with some infiltration of fibrin. There are large numbers of polymorphonuclear leucocytes present at these points. The fat is infiltrated by polymorphonuclear leucocytes, large mononuclear leucocytes and lymphocytes. Several lymphatics are distended with poly-

*Read (in part) at a meeting of the Boston Society of Psychiatry and Neurology, November 20, 1930.

†For the use of the term "vaccinial" in place of "vaccinal", see the editor's note at the end of the paper by McIntosh, J. and Scarff, R. W., *Jour. Path. and Bact.* 33:483, 1930.

‡References to the literature on experimental vaccinial encephalitis are appended to the papers on that subject by Hurst, E. W. and Fairbrother, R. W., *Jour. Path. and Bact.* 33:463, 1930 and by McIntosh, J. and Scarff, R. W., *Jour. Path. and Bact.* 33:483, 1930.

††Reports of recovered cases, however, except under exceptional circumstances, are of doubtful value. Grey and Whittaker[10] think, with considerable justification, that even certain fatal cases, reported as vaccinial encephalitis, are the result of septicemia and they so report two mistaken diagnoses.

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morphonuclear leucocytes. No bacilli are seen although there are a few scattered cocci in some of the foci of necrosis.

Lepto-Meninges: Congested and edematous, containing a moderate number of polymorphonuclear leucocytes and rare mononuclear leucocytes. Some perivascular edema.

Cerebrum: Congested. Rare vessels in the white matter show scattered mononuclear leucocytes in the adventitial spaces. Some perivascular edema.

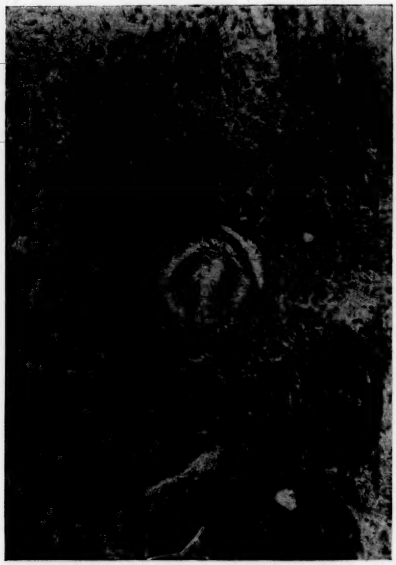

FIGURE 1. Case 1. Mid-brain showing perivascular rarefaction and infiltration. Phosphotungstic acid hematoxylin stain. ×250.

Mid-Brain and Pons: Moderate congestion with perivascular edema throughout. Numerous vessels are strikingly hyperemic. The outstanding picture is that of perivascular infiltration and rarefaction of the brain tissue surrounding the vessels. This rarefaction is found to be due to zones of demyelinization, which range in width from twice to six times the diameter of the vessel which they surround. The endothelium of a number of vessels is swollen. At times migrating polymorphonuclear leucocytes and large mononuclear leucocytes can be seen passing through the vessel walls. These are at times present in the adventitial spaces. There is a varying degree of perivascular edema and this is accompanied by infiltration with rare polymorphonuclear leucocytes, scattered large mononuclear leucocytes and occasional lymphocytes. Throughout the zone of demyelinization a similar cellular exudate extends, becoming less in intensity as the distance from the vessel increases. Toward the periphery of the zone of demyelinization there is moderate increase in the number of nuclei due to glial proliferation. These cells are, apparently, all of the microglia type. At some points there is not only demyelinization but a complete disruption of the axis cylinders can be seen. The reaction is not evenly distributed but is much more intense about some vessels than others. One or two questionable mitoses in large mononuclear leucocytes can be seen, but cannot be accurately studied. There is no evidence of either intracellular or intranuclear inclusions.

Cord: Meninges slightly edematous and contain scattered polymorphonuclear leucocytes and some mononuclear leucocytes. Otherwise negative. Only portions of the cord were available for study.

Lymph Node: Marked congestion with some hyperplasia of reticulo endothelial cells.

Microscopical Diagnoses

Encephalitis, postvaccinial
Acute meningitis*
Ulceration and acute inflammation of skin (vaccinia)
Congestion of lungs and spleen
Hyperplasia of lymph nodes.

CASE 2. C. T., female, aged 8 years (St. Luke's Hospital, New Bedford, Mass. No. 86936), was vaccinated at the same time as her younger brother, May 27, 1930. Her condition was apparently normal until the *eleventh* day (June 7), when she became drowsy

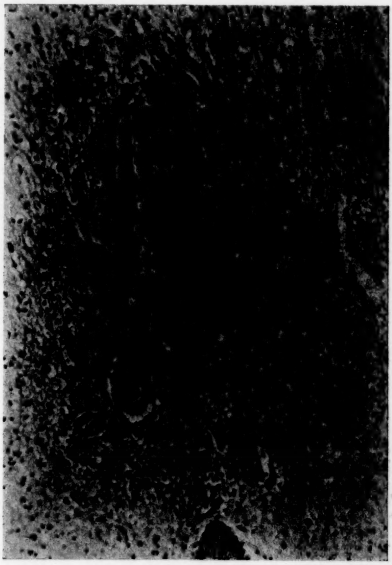

FIGURE 2. Case 2. Mid-brain showing perivascular infiltration. Phosphotungstic acid hematoxylin stain. ×200.

and complained of headache. The next day she became semi-stuporous. There were no convulsions but some jerky movements of the arms were noted. The child entered the hospital the same time as her brother, June 10. On examination she was found to be semi-conscious, her eyes half open, face flushed. The dilated pupils reacted normally to light. There was some rigidity of the face muscles and stiffness of

*Apparently a reaction to the intraspinal administration of tetanus antitoxin.

the neck muscles. Chest, lungs and abdomen were negative. The extremities showed slight rigidity. The knee jerks were normal and there was no clonus or Babinski sign.

A provisional diagnosis of tetanus was made, as in the case of her brother, and tetanus antitoxin given. The temperature on admission was slightly over 100°F. and varied in the first two days from 99.5°F. to 104.8°F. In the next three days the temperature ran from 102°F. to 104.8°F. and gradually fell off on the sixth or seventh day to normal. Two days after admission the child appeared somewhat brighter and the administration of tetanus antitoxin was stopped. Twenty days after admission the patient complained of some pain in the knee and five days later a foot-drop on the left side was noted. Otherwise, at this time, the child was well and sat up in a chair. She continued to improve, except that the leg still showed foot-drop; on August 3 she left the hospital.

The patient was first seen by one of us (H. R. V.) June 12, 1930, two days after entering the hospital. The child was slightly stuporous but could be roused. There was no irritability and no tenderness of the extremities. The pupils were equal and reacted normally to light. The fundus examination revealed

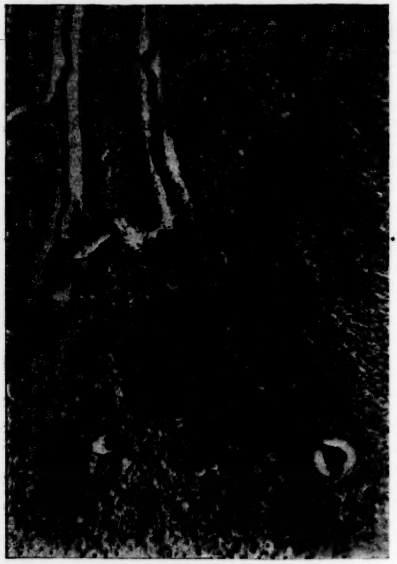

FIGURE 3. Case 2. Substantia nigra showing perivascular infiltration, rarefaction, and some neuronophagia. Phosphotungstic acid hematoxylin stain. ×200.

blurring of the discs with dilated veins and retinal hemorrhages. There was slight ptosis of the right lid and trismus was moderately definite. The deep reflexes were not obtained in either arms or legs and there was no ankle clonus or Babinski sign. The left arm, the side of the vaccination, was more rigid than the other extremities, especially in the upper part. The neck was somewhat stiff and there was a slight bilateral Kernig sign. The diagnosis made at the time was tetanus.

The patient was seen again September 24, 1930, four months after vaccination. The only abnormal finding was a paralysis of the left lower leg with paralysis, loss of tone and some atrophy of the flexors and extensors of the ankle. The knee jerks were equal and active. The left ankle jerk was absent and there was no response to plantar stimulation.

CASE 3*. P. B., male, aged 6 3/12 years (Children's Hospital, Boston, No. 107,804), was vaccinated two

FIGURE 4. Case 2. Left hemisphere, showing sub-ependymal congestion of vessels, with perivascular infiltration. Phosphotungstic acid hematoxylin stain. ×200.

weeks before admission (July 30, 1927). The patient was perfectly well until about 4:30 P.M. two days before admission (tenth day after vaccination), when he was seen sitting on the steps at home, holding his head in his hands. He did not feel like playing with his sister. That evening his mother found him lying on the ground in a convulsion, tonic in type, which lasted at least about fifteen minutes. She gave him a dose of castor oil, put him to bed and he slept well that night. On August 10, one day before entrance, he seemed bright. He drank a glass of milk for breakfast. At noon he became stuporous. A doctor was called and found the child with a temperature of 105°F. He "moaned" all night; his arms and legs twitched.

On admission to the hospital the child was stuporous. The muscles of arms and legs were held in spasm; they twitched at intervals. His mouth could be opened only with difficulty. The eyes had rolled upward, the left eyelid was closed, the right partly opened; the left orbital region appeared slightly edematous. There was a left facial paresis. Examination of the fundi revealed clouding of the nasal margins of both discs. The chest, heart and abdomen were negative. The left ear-drum membrane was

*Reported through the kindness of Sidney Farber, M.D., Children's Hospital.

normal; the right showed an old perforation. There was dried exudate in both nostrils. The cervical, axillary, and inguinal lymph nodes were palpable. On the right buttock there was a hot, red, indurated, non-fluctuant area about 4 x 5" in size. The neck was slightly rigid but could be flexed. The Babinski and the Oppenheim signs were positive. The left knee jerk was very active; the right seemed weakened. The spinal fluid contained 57 cells per c.mm.; 56 per cent. were polynuclears; globulin test, negative.

The boy remained stuporous, his temperature increased to 108°F. and he died within twenty-four hours of admission (August 12, 1927).

POSTMORTEM*

GROSS FINDINGS

There were no significant findings in the autopsy other than the neurological except for slight sogginess of the lungs with the presence of a small amount of sero-hemorrhagic fluid in the lung tissue.

Brain: 1030 gms. Dura somewhat adherent to underlying meninges. Pia arachnoid dull, slightly thickened. Slight amount of opaque exudate in the sulci. No excess fluid. A slight pressure cone shows on the cerebellum. On section minute spots of apparent perivascular hemorrhage are seen in the white matter, particularly of the cerebrum and the capsule.

Spinal Cord: Meninges slightly thickened and injected. Gray matter congested with edges ill-defined.

MICROSCOPICAL EXAMINATION

The chief interest centers in the central nervous system. Examination of the brain shows foci of perivascular infiltration distributed generally through the white matter, occasionally involving the gray matter. Most of the vessels are hyperemic. The perivascular infiltration is particularly marked in the region of the basal ganglia and the pons.

A typical lesion may be described as follows: The vessel is markedly distended and engorged with red blood cells. The endothelial cells are swollen and unusually prominent. In the perivascular (adventitial) space there is marked infiltration with large mononuclear leucocytes, a few lymphocytes and rare polymorphonuclear leucocytes. There are also present in the extra-adventitial space, the lymphocytes and polymorphonuclear leucocytes diminishing in number with increased distance from the lumen of the vessel. The width of the zone of infiltration ranges from three to five times the diameter of the vessel. In the region of infiltration there is extensive demyelinization. In the outer region of the zone of demyelinization there is an increased number of glia cells, apparently microglia. Some of these appear definitely swollen. The mitoses noted by Perdrau[13] in the large mononuclear leucocytes are not seen in this case. There is no evidence of intracellular or intranuclear inclusions in either the cells of the exudate or the normal brain cells. In a few places these foci of perivascular infiltration and demyelinization occur immediately beneath the ependyma, although there is no necrosis of the ependyma or breaking through of the exudate into the ventricle.

The nerve cells appear intact, although there is glial proliferation about them in a few foci. There is no evidence of neuronophagia. The meninges are hyperemic and the pia arachnoid somewhat edematous. Scattered lymphocytes and large mononuclear leucocytes are present in the subarachnoid space. In a few foci, particularly toward the base of the brain, there is definite polymorphonuclear infiltration in the subarachnoid space with scattered polymorphonuclear leucocytes in the extreme outer portion of the cerebrum. A few of the perivascular foci show extensive extra-adventitial polymorphonuclear infiltration.

*Children's Hospital. Autopsy No. A-27-127.

Spinal Cord: Scattered foci of dilatation of vessels and perivascular infiltration. The reaction is similar to that seen in the brain. An occasional anterior horn cell shows slight degenerative changes with occasionally a suggestion of neuronophagia.

Anatomical Diagnoses

Polio-encephalitis with meningeal involvement.*
Pulmonary congestion.
Calcified mesenteric lymph node.
Ascaris infection.
Superficial inflammation of buttock.
Vaccinial pock.

Microscopical Diagnoses

Encephalo-meningitis.
Focal necrosis of spleen, liver and lymph nodes.†
Bronchopneumonia, early.

THE CLINICAL ASPECTS OF THE DISEASE

The most striking feature of the cases of vaccinial encephalitis reported above, and in the medical literature, is the uniformity of the onset, course and time relations of the symptoms. The course of the disease in all cases is rapid, patients in the fatal cases dying on the third or fourth day after the beginning of symptoms, or about two weeks after vaccination. Our first patient became ill on the twelfth day and died on the fourteenth day after vaccination; his sister (a mild, non-fatal case) was taken ill on the eleventh day after vaccination; the third patient had his first symptoms on the tenth day and died on the fourteenth day after vaccination. The same findings are recorded in patients who have been vaccinated in a hospital and observed throughout the whole course of the illness. Such a patient is reported by Coyle and Hurst[10] as follows:

A girl, aged 5, entered the Mile End Hospital, London, with pneumonia June 1, 1929. The patient was ready for discharge June 23, but as a case of smallpox had appeared in the same ward, the child was vaccinated while in the hospital, June 26, with 14 other patients, including some nurses. All the patients were given the same vaccine. On the thirteenth day (July 9), after a normal "take", the child became excited, ran about the ward and struck other children. The *fourteenth* day headache was complained of, with pains in the limbs and the temperature was elevated to 101.6°F. By noon there was incontinence of urine. Later the patient became drowsy and by afternoon was semi-conscious, with a free flow of saliva. When examined that same day, there was ptosis of the right lid, some stiffness of the neck muscles, weakness of the right arm and leg, with twitching at the angle of the mouth. Bilateral ankle clonus, not well sustained, active knee jerks,

*At the time of the original examination (1927) the condition was not considered as being of the vaccinial type. A subsequent review of the material led to the more specific diagnosis of vaccinial encephalitis.

†Inasmuch as focal necroses were present in the spleen, liver and lymph nodes, there may be question in the minds of some as to whether the central nervous system findings in this case might not be similar to those rarely encountered in the course of septicemias. There was present an early bronchopneumonia which is sufficient to explain the focal necroses, but which is not adequate in any sense to explain the central nervous system lesions. Moreover, during life, the blood culture taken was negative; also cultures taken at the postmortem examination were negative. Cultures and smears of the cerebrospinal fluid, antemortem and postmortem, showed no evidence of bacteria.

The inflammation on the buttock was extremely superficial and there was neither necrosis nor polymorphonuclear infiltration. The evidence seems sufficient to rule out generalized sepsis as a factor.

bilateral Babinski sign and dilated retinal veins were noted on examination. The spinal fluid contained 8 lymphocytes per c.mm. The *fifteenth* day the patient was comatose and the deep reflexes were not obtained; she died on the evening of the *fifteenth* day after vaccination. The pathological examination of the brain and spinal cord confirmed the diagnosis. One other child in the same ward, who had received the same vaccine, showed mild symptoms but recovered.

Other examples, showing the usual course of the disease are found in the reports by Wilson and Ford[6]:

A girl, nearly three years of age, developed pain in her legs and drowsiness on the *eighth* day after vaccination. Stupor, trismus, opisthotonos, rigidity, clonic movements of the arms, increased tendon reflexes and Babinski responses were found on examination on the *fourteenth* day. The spinal fluid contained 6 cells per c.mm. Death occurred after increasing stupor, on the *twenty-first* day after vaccination. Pathological changes, similar to those described by Turnbull and McIntosh[1], were found in the brain.

The second patient, a boy 6 years of age, developed headache on the *twelfth* day after vaccination. On the *fifteenth* day there was squint, ptosis, weakness of the extremities, stiffness of the neck, trismus, a suggestion of a positive Kernig sign, and a bilateral Babinski sign. The spinal fluid contained 8 cells per c.mm. The child died in convulsions *sixteen* days after vaccination.

Hassin and Geiger's[4] patient, also, died after a similar onset and course:

A boy, aged 7, was vaccinated about 2 weeks before being seen. There was a history of frontal headache on the *twelfth* day after vaccination, several convulsions and trismus. On examination, the head was retracted, the mouth was firmly closed, the upper extremities were spastic. A diagnosis of atypical tetanus was made and tetanus antitoxin was given. On the same day the patient developed convulsions and became comatose. He died the same day, about *fifteen* days after vaccination and approximately *three* days after the onset of symptoms.

Other features of the disease are to be noted. The earliest symptoms are headache, vomiting and pyrexia, with a tendency towards paralysis. In infants, in addition to the above, convulsions are frequent. Consciousness is soon lost. The paralysis consists of weakness of the cranial nerves or the extremities and there is a considerable variation in intensity from time to time. The Babinski response is sometimes obtained; as the disease progresses, the deep reflexes disappear. Sphincter control is usually disordered, incontinence being a common finding. Trismus has occurred in many cases, a symptom which has led to errors in diagnosis*. The spinal fluid is often increased in pressure and there may be a few mononuclear and polynuclear cells; otherwise, it is negative.

If recovery from the disease takes place, it tends to be complete. Unlike poliomyelitis, residual defect is not usual. In Case 2, nevertheless, there was a "foot-drop" four months after the illness. Later manifestations, such as are frequently observed in encephalitis lethargica, have not been recorded. The mortality rate is high: in the English reported cases, about 50 per cent. and in those recorded by the Dutch, 35 per cent[11].

*In a number of instances tetanus antitoxin has been given on the assumption that the disease was atypical tetanus. *See*, Case 1, Case 2 and Hassin and Geiger[4].

THE PATHOLOGY OF VACCINIAL ENCEPHALITIS

The pathological picture of vaccinial encephalitis is usually clear-cut[1, 13] and may be distinguished from that of encephalitis lethargica or from poliomyelitis. The gross lesions are not at all distinctive, consisting chiefly of hyperemia of the meninges, some edema of the brain, and at times punctate spots in the brain substance due to dilated vessels. The microscopical picture, however, is distinctive. The outstanding lesion is perivascular cellular infiltration, not restricted to the immediate zone of the vessels but extending some little distance out into the brain substance. This is usually accompanied by perivascular demyelinization. The rapidity with which the demyelinization appears is surprising, having been found in rare cases as early as three days after onset of nervous symptoms[13].

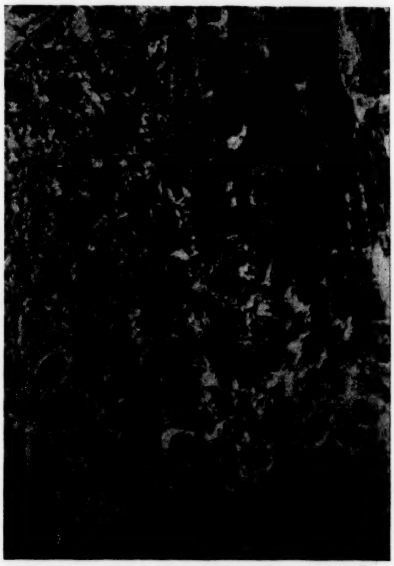

FIGURE 5. Case 1. Portion of Figure 1 under high magnification to show character of exudate. Note mitotic figure. Phosphotungstic acid hematoxylin stain. ×750.

The lesions are widespread throughout the brain as a rule, tending to involve the white matter rather more than the gray. The more acute the case, the more even the distribution. The lesions may be most intense in the region of

the pons and the upper portion of the medulla. Together with this there is in the cord a tendency toward softening, particularly in the lower portion, with a partial demyelinization of certain fibers there[13, 14]. While a great deal of controversy has taken place as to whether the lesions are or are not specific, nevertheless on the basis of the work of Turnbull and McIntosh[1], or Perdrau[13], and others, the lesions may be recognized as distinct from those of encephalitis lethargica or poliomyelitis.

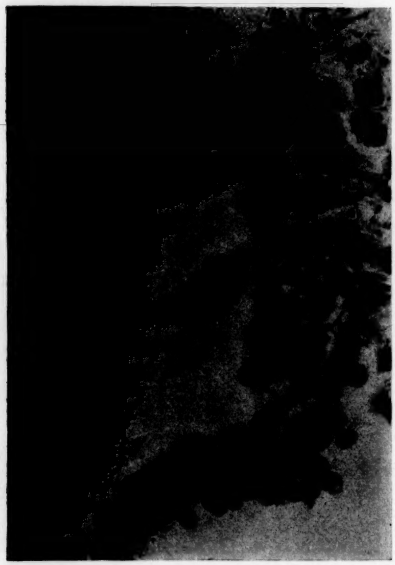

FIGURE 6. Case 1. Pia arachnoid, showing edema and cellular infiltration. Phosphotungstic acid hematoxylin stain. ×750.

A detailed histological picture may be described as follows: the vessels, particularly the veins, are hyperemic and there is an infiltration in the perivascular space of mononuclear cells and polymorphonuclear leucocytes in small numbers. There is no thrombosis or vascular occlusion. In the extra-adventitial tissue there is infiltration, becoming more diffuse as distance from the vessel increases, with mononuclear leucocytes, lymphocytes and rare polymorphonuclear leucocytes. Together with this there is infiltration of microglia cells, many of which are markedly swollen. With ordinary stains there is seen to be a zone of rarefaction surrounding the vessels. Special staining methods reveal complete disruption of the myelin sheaths and rapid disappearance of the myelin itself in these zones, while not infrequently the axons themselves are destroyed[4, 16]. In the adjacent uninvolved portions of the brain the nerve fibers and their myelin sheaths can be readily distinguished. Perdrau[13] emphasizes the nuclear degeneration of endothelial cells undergoing mitosis. There is some tendency for focal increase of microglia cells in the cortex as well, although there is rarely evidence of neuronophagia[16]. Acute degenerative changes in the nerve cells are reported by De Vries[17]. By and large there is much less involvement of the gray matter than of the white matter.

In more chronic cases Pette[15] has found an increase of the macroglia as well as the microglia. In one chronic case, the patient dying four months after vaccination, Perdrau[13] found calcification of the media of the vessels and also calcified masses about the capillaries.

Querido[18] mentions in his case, which deserves particular attention because of its being the only reported case in which the disease followed a revaccination, a marked degeneration of the pigment-containing cells of the substantia nigra. Involvement of the substantia nigra is also mentioned by Bastiaanse[3] and by Lucksch[19].

Inclusion bodies have not been found in the lesions. In many cases there is an accompanying meningitis[1]. The subarachnoid space is distended and there are numerous large monuclear leucocytes, lymphocytes, and occasional polymorphonuclear leucocytes. The vessels are decidedly hyperemic and dilated, and the endothelial cells of their walls are plump. There is not infrequently evidence of migration of large mononuclear leucocytes and polymorphonuclear leucocytes through the wall.

Meningitis has been particularly stressed in the experimental work with neurovaccinal virus. Spooner[20], working with rabbits, has brought out the relative importance and extent of the meningitis of neurovaccinia as compared with that secondary to herpetic infection. However, the cytological changes are essentially similar, the presence or absence of the intranuclear inclusion bodies of herpes being the only sure differential sign. Spooner's rabbits did not show the perivascular demyelinization in the brain substance characteristic of human postvaccinial encephalitis.

A number of writers, notably Perdrau[13] and Wilson and Ford[6] have called attention to similarities between the lesions of vaccinial encephalitis and the lesions occurring in the course of certain of the acute exanthemata. Greenfield[21] has reported two cases following influenza, in which the lesions are very similar to those encountered in vaccinial encephalitis.

CONCLUSIONS

1. Encephalitis, subsequent to anti-smallpox vaccination, occurs, often with a fatal termination.

2. In two of the three cases here reported death took place on the fourteenth day after vaccination.

3. The disease appears acutely, usually on the tenth to twelfth day, with headache, vomiting, pyrexia, transient or shifting paralyses and, in infants, convulsions; loss of consciousness soon follows with reflex changes and disordered sphincter control. Trismus may occur. The spinal fluid is slightly altered.

4. In surviving patients there is usually no residual defect or late manifestation. An exceptional case of late paralysis is reported (Case 2).

5. Microscopic examination of the brain shows pathological changes, distinguishable from those found in encephalitis lethargica or poliomyelitis. The principal lesions are perivascular cellular infiltration and demyelinization, most intense in the pons and medulla but, also, widespread throughout the brain.

6. The disease may be mistaken, clinically, for tetanus.

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MENTAL-HYGIENE PROBLEMS OF CHILDREN WITH SENSORY-MOTOR DEFECTS*†

BY BRONSON CROTHERS, M.D.††

CHILDREN who are handicapped by any obvious disorder, either of a sensory or a motor type, are bound to find difficulties in adjusting themselves to an educational and social routine worked out for ordinary individuals. They frequently suffer from entirely unnecessary difficulties, some of which are gratuitously imposed upon them by well-meaning teachers and relatives. The members of this Congress need not be reminded that one of the greatest achievements of modern psychiatry is the removal of obvious and unnecessary burdens from those whose minds work in unusual or unacceptable ways. In the physical field, the "stigma" is perhaps less obvious, but pity and pessimism are unnecessarily prevalent.

It is unfortunate, in the first place, that the handicapped child is classified and educated on the basis of his least useful characteristic. It is not only unfortunate, but inevitable, that such words as "blindness", "deafness", "paralysis", and so on, should be used. I see no way of avoiding these names, but I believe it can be demonstrated that a conception can be built up which deals not with the defect, but with the physiological residue that is still intact.

If we can study the residue from a physiological standpoint, we may find that certain educational measures, now generally accepted, are not completely valid. It may well be that less emphasis on the liability and more upon the assets will be possible.

Another rather discouraging idea is that destruction of the cells of the nervous system is never followed by recovery of function. While it is probably true that cells destroyed are not replaced, it is entirely untrue that restoration of function may not occur through adaptation.

If one looks over the methods of education and medical treatment of handicapped children, it is possible, I think, to defend a theory that education is satisfactory in direct ratio to the adequacy of the diagnosis and prognosis from a physiological and educational point of view. A clear example is infantile paralysis. In this disease the effects of infection are confined, for all practical purposes, to the anterior horn cells of the spinal cord. These cells are either destroyed completely or remain undamaged. Their only function is to stimulate the activity of definite muscle fibers. It is quite obvious that the physiological diagnosis can be accurately established by one of the simplest of mathematical procedures—subtraction. Subtraction is a process that all of us understand. We watch the process constantly and in every field of activity with relatively little emotion, provided we are convinced that the total capital is large and increasing and that the amounts subtracted are of manageable size and of known character. The process becomes disturbing only if any of the various factors are uncertain in amount or vaguely defined.

Since every one knows that complete mental integrity is part of the remainder after infantile

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paralysis, the educational problem is attacked cheerfully and efficiently by teachers, legislators, and every one else. The orthopedists happen to have dealt with the physiological remainder after infantile paralysis, and the complicated and effective procedures that they have developed show what can be done in the way of physical correction.

At the other end of the scale is the victim of so-called Little's disease or cerebral spastic paralysis. Here we are faced with a vaguely defined physiological residue dependent on a variety of agents. Medical opinion is confused, and in consequence educational procedure is neither clearly formulated nor consistently carried on.

The children with cerebral palsy have, by definition, some abnormality of structure of the brain itself. Most of them have had this abnormality from birth, or at least from early infancy. The perversion of motor activity may exist alone or be associated with any degree of mental defect. The tragedy is that a very general impression exists among teachers and doctors that mental defect is part of the clinical picture in almost all cases.

Naturally any attempt to change an attitude of bewildered pessimism to one of effective optimism must be preceded by evidence that a reasonable number of these children are completely intelligent and that rational and successful measures can be worked out for their training. It is worth while, therefore, to consider certain soluble difficulties that lie in the path.

It is abundantly evident that relatively few people, even among the medical profession, regard the brain as an integral part of the human body. In medical schools, it is possible to dissect the rest of the body accurately and to gain adequate information by sight and touch. The brain, unfortunately, cannot be conveniently studied in the same way, and the student is expected to visualize structures through looking at cross sections and diagrams. As a result he, quite properly, comes to the conclusion that the brain is a most complicated organ. Unless he has unusual curiosity, he resolves to practice among individuals who do not need rigid neurological study. Inevitably he soon finds that he cannot do this and still care for patients with general diseases. If he is fortunate in his teachers, he is driven back to anatomy and physiology, which he reëxamines, and he acquires an ability to interpret clinical problems in physiological terms. If he is less fortunate, he attempts to find names and descriptions of conditions similar to the one he is observing. The difficulty here is obvious. The most reliable and consistent clinical pictures are found among those affected by severe and usually progressive diseases of the nervous system. Just as the standard textbooks of psychiatry, a few years ago, were filled with clear descriptions of disabling psychoses, so the neurological textbooks still in active use are filled with depressing pictures of disabling organic conditions.

It is, I think, fair to say that the organic disorders of the nervous system in childhood are largely dependent upon infection and upon injury and relatively rarely dependent upon degenerative processes or defective heredity. I am quite aware that the textbooks are full of long descriptions of various degenerative diseases in children, and that certain enthusiasts regard heredity as overwhelmingly important. I can only state that in ordinary neurological practice, the child with a classical degenerative disease or a clean-cut hereditary disorder is unusual. The very rarity of the conditions mentioned stimulates the publication of these cases and encourages their exhibition to students.

If I am correct in believing that infection and injury are important—even if I am wrong in believing them to be predominantly important—it follows that every type of disability may be expected. On the whole, infection and injury are likely to damage the nervous system in any part and to any degree. It is unlikely that two or more individuals will be left with identical disabilities, and it is obvious that the search for an exact description and an adequate name will be futile. The logical alternative, of course, is to decide, as competently as may be, a few absolutely essential points which are needed for adequate management.

The first is the question whether the pathological process is progressive. If changes are taking place, medical investigation is essential and urgent and takes precedence over education.

Secondly, if the process is no longer operative, is the physiological residue without value? The answer to this question is one of the most important in medicine, yet methods of answering it—or, indeed, the necessity of answering it—are given little attention. Quite obviously an absolutely authentic decision that no valuable physiological assets exist is of great value, and the sooner it is made, the better. Such a diagnosis is valid only if the survey of assets is complete. It is justified if the child's intellect is grossly and demonstrably defective. It is also reasonably correct if moderate intellectual defect is combined with serious motor disturbance or with recurrent and unmanageable convulsive attacks. Here a very definite and very difficult problem arises. How early is recognition of mental integrity or deficiency possible and accurate? If a psychologist with special training is available, it is probable that sufficiently accurate information can be gathered by the latter part of the first year. The adequacy of the judgment is dependent, however, upon a clear understanding of the effect of various sensory and motor disorders upon performance. In any case, repeated observations should indicate, in most cases, the degree of intellectual capacity

long before formal educational programs become a problem.

The presence of convulsions is, of course, a very definite element in any case and, on the whole, leads most people toward gravity, if not toward pessimism, in prognosis.

One of the highly respected traditions of medicine is the statement that parents do not recognize mental defects in their children. This statement has some validity if it is changed to "admit mental defects". Even so, it is arguable that the reason is not ignorance on the part of the parent, but a grossly wrong attitude on the part of the doctor. Statistical analysis of this question is not possible, but most parents will admit an educational difficulty and discuss it fairly and without reserve, whereas they defend themselves and their children against what is frequently presented as a familial taint.

In no case with lesser degrees of disability should complete pessimism be regarded as reputable until carefully conducted educational procedures have failed to indicate a way out. This question will be considered again later on.

If the pathological process is no longer active and if bankruptcy is not acceptable, the doctor, as a medical man, steps aside and presents the problem to teachers. This procedure is effective if he can present with the child a clear analysis of assets and disabilities, and if he can find a suitable and optimistic teacher.

Here, again, a curiously inadequate division of labor and of opportunity exists. The doctor, by education, is theoretically able to define the assets of the child and set the limits within which education is feasible. Practically, he puts all sorts of almost insurmountable obstacles in his path. In the first place, he is likely to work in a conventional hospital. The handicapped child is put to bed in a ward. The two vitally important matters to consider are behavior and reaction to educational efforts. The conventional procedure is to abolish activity by putting the child to bed and to isolate it from educational procedures. The complete futility of this method is theoretically apparent and practically demonstrable. The result, of course, is that these children are usually not studied at all in infancy unless some surgically manageable complication is evident.

The effort to teach is not made, ordinarily, until the handicapped child is thrown, without preliminary investigation of any effective sort, into competition with ordinary children at school age. The stage is set for stress and disappointment.

Obviously a few children survive this rather brutal trial-and-error method. Of course, a number of unteachable children are properly discarded. But a good many of them struggle along with predictable and unnecessary disappointment and failure.

The way out, in general, seems evident enough. We all know that the years between birth and six are important. Almost every child with gross disturbance of the motor or the sensory machinery is under some sort of supervision long before school age.

If those responsible for supervision could be persuaded that any peculiarity or defect not dependent on active disease should be considered as an obstacle to a satisfactory adjustment in school, plans could be made to solve the recurring and baffling educational problems. It would then become quite obvious that children with fixed lesions of the nervous system should be described in terms of valid remainders for purposes of education and in terms of defects for purposes of medical classification.

The doctor as a medical therapist has certain continuing duties. Every now and then operations should be performed or apparatus should be altered, and these various details should naturally fall under his supervision. In the main, however, he should regard himself as one of a team engaged in planning an adequate educational routine for the child. His place in the team is often that of a leader. This position may be deserved or its retention may be frankly impertinent. Obviously, a physiotherapist, a psychologist, or anyone else may be the ingenious and productive member who does, and should, set the pace.

If a group undertakes the work of defining the type of education likely to benefit a child, before formal school begins, it is probable that a new bit of machinery must be created, which will have the same relation to special classes and to custodial institutions for cripples as the child-guidance clinic or the psychopathic hospital has to custodial institutions for children or adults.

A description of the machinery now in operation at the Children's Hospital in Boston shows the type of institution that seems to us likely to assist in the wise and early solution of the educational problems under review.

I. *Relation of Special Unit to the Hospital and to the Community.*

The Children's Hospital is one of a group of institutions connected more or less closely with, but not controlled directly by, Harvard University. Special clinics for obstetrics, psychiatry, and so on, as well as a large general hospital, are near by. In addition, we have a convalescent home within a few miles and, by close association with a hospital home for children, we can rely on coöperation in the care of seriously handicapped children who need prolonged medical observation. Various other conventional organizations, both medical and educational, are available for help. In addition, a most efficient commission, under university auspices, is coöperating with the state in supervising infantile paralysis and meningitis, and another is fostering research work in epilepsy.

At first glance, this formidable equipment

seems not only adequate, but excessive, yet we felt, after many years of study, that we had failed in many ways to develop a rational and effective method of discovering educational assets and outlining plans of training.

Through a liberal grant from the Julius Rosenwald Fund of Chicago, and through the generous support of our managers, we are now equipped with space and with people to work in it. At the risk of stressing a plan that might be impracticable under other conditions, it seems worth while to present the scheme in some detail.

II. *Personnel.*

1. The director is neurologist to the hospital, with responsibility for a special clinic in the outpatient department and for consultation in the wards of the other services. He is assisted by one man who is doing research work in neurological surgery, a clinical associate, and a resident interne.

2. Fortunately we have been able to engage the interest and service of a trained psychologist, with adequate experience among small children, who accepts the challenge of attempting to establish intellectual levels in the presence of motor or sensory disorders.

3. A psychiatric social worker, whose main duty is in the general clinic, but who is available for consultation, is an important member of our staff.

4. A physiotherapist, who has devoted many years to the physical training of children with disorders of the nervous system in the outpatient department, is now devoting most of her time to the special group of children in the new unit.

5. We are still a bit uncertain as to the exact place that should be occupied by a teacher. At present we are dealing with children too young for formal academic work, and are chiefly interested in the type of nursery-school education that is increasingly prevalent in this country.

6. We have in mind the complicated problem of dealing with special disabilities of speech, reading, and so on, and for this purpose propose to enlist the aid of research associates from the Harvard Graduate School of Education.

7. Nursing service of the usual type is, of course, available.

III. *Physical Plant.*

The physical plant seems to us well adapted to its purpose. The special unit occupies two out of five floors of a fireproof building. The other floors are thoroughly equipped and staffed for physiotherapeutic work, including adequate facilities for heliotherapy and a pool where exercises can be carried on in warm water. Outside is a small playground with sufficient equipment and space to serve our purpose.

The unit occupies, as I have said, two floors. The plans are largely self-explanatory. The dormitory is devoted to a group of children of approximately the same age and type. The isolation rooms exist in order to enable us to protect the majority from minor infections or to segregate cases not easily cared for in the open dormitory.

Each child has a locker, and every effort is made to make each child care for his or her belongings. It will be noted that a very large and well-lighted space is set aside for toilet facilities. The establishment of acceptable personal habits is so important that we have provided space and suitably constructed fixtures on a considerable scale.

On the same floor several individual rooms are provided. At times these can be occupied by children who are not suited to the large dormitory for some reason, but their chief usefulness is to allow us to invite mothers to live in the hospital while they watch proceedings. It is our hope that we cannot only work out an acceptable educational program but demonstrate it and interpret it before discharging the child.

On another floor a relatively large space is occupied by a playroom and a schoolroom and arrangements for psychological investigation, as well as conventional office and treatment rooms. In addition, an isolated room with a continuous bath is available for suitable cases.

Taken as a whole, it is clear that we are in a position to attack the problem rationally. In the first place, we are no longer forced to go through the futile process of studying behavior by abolishing it and of fostering education by making it impossible.

At the same time, the unit is an integral part of a thoroughly equipped teaching hospital, so that all the resources of scientific medicine can be brought to bear on suitable cases. The fact that the work is conducted in coöperation with other services simplifies all sorts of problems of apparatus, contagious disease, hospital administration, and so forth.

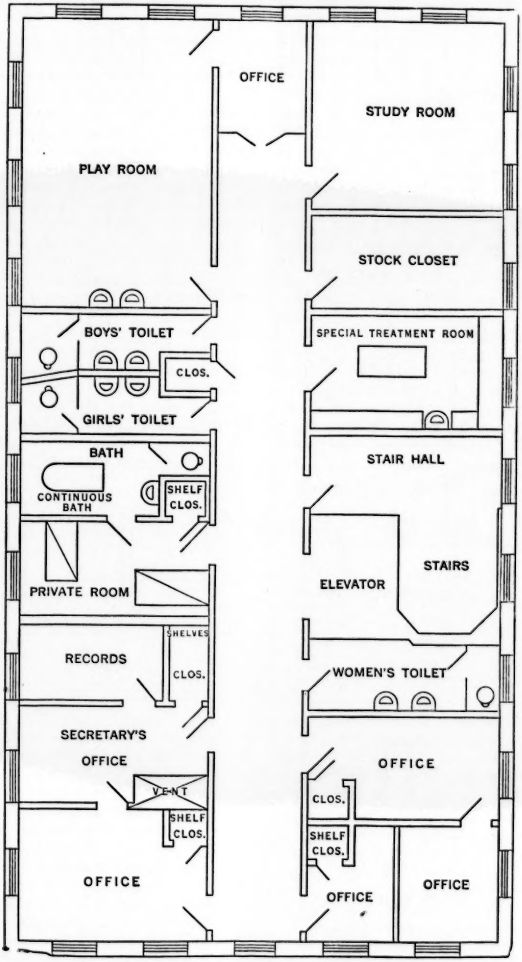
It seems to us that the validity of the attempt to conduct educational experiments on what is conventionally regarded as medical material is clear. Naturally, like everyone else trying out a new method, we are probably overestimating the importance of some factors and ignoring others.

If the general idea is sound, it is clear that we will all—doctors, teachers, psychologists, and the rest—become students and practitioners of education. The change of status has vast advantages. A period of observation of several weeks seems long indeed if labelled "medical". If, however, we can be regarded as teachers, a few weeks is a very short period for the establishment of a valid program in a complicated case.

We hope to be in a position to save many of the children under our care from unnecessary difficulties in adjustment later on by deciding, before school age, certain questions that would otherwise be settled by the usual brutal method

of trial and error under conditions unfair to the child.

In the first place, we are trying to discover adequate ways of appraising the intact physiological residue. If this residue cannot be utilized, we attempt to show the family the futility of forcing an incompetent child into competition in which failure is inevitable. We recognize fully the extreme importance of accuracy and make use of every technical and social resource at our disposal in these cases before acknowledging defeat. Obviously, if failure can be predicted before repeated disasters have embittered the family and discouraged the patient, a considerable amount of wear and tear will have been avoided.

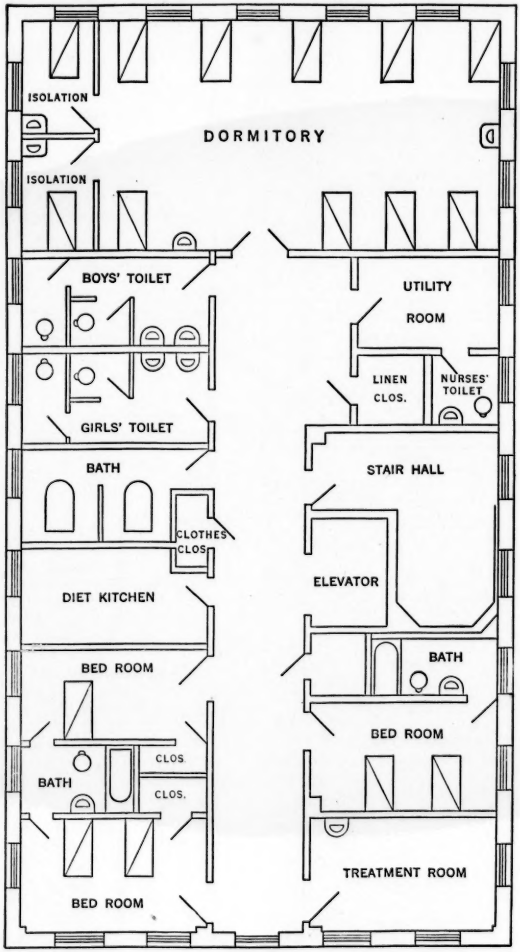


Next, we are prepared to try out various methods of education in cases where tradition suggests that pessimism is in order. Children handicapped by chaotic choreiform disorders due to fixed lesions are typical examples. The attempt to discover methods of dominating the

bizarre extrapyramidal type of disturbance by encouraging new patterns is, it seems to us, worth making.

In principle, our whole effort, in this particular unit, is to reduce all our problems to definite terms. If we can do that, we hope to be able to define the physiological assets and predict the educational progress of these children as satisfactorily as is now done with children with infantile paralysis.

Obviously, the vast subject of mental hygiene for children handicapped by disorders of the nervous system will not be solved by the procedure outlined above. The next step, however, can be foreseen with some clearness. If doctors and parents and teachers realize that medical nomenclature must necessarily be dominated by defects, but that educational programs must be based on remaining assets, a new attitude can be fostered. It is conceivable that the whole group of children can be regarded as a series of stimulating challenges to educational methods instead of as a load to be carried with pessimistic fortitude.



THE PRESENT STATUS OF GOLD THERAPY

BY HARVEY P. TOWLE, M.D.*

IT is now about five years since Schamberg first brought the gold salts to the attention of the dermatologists in this country. It would seem, therefore, as if time enough has elapsed for us to take an account of stock to determine, if we can, whether we are operating at a profit or a loss and also what the future offers.

To this end we have scanned the literature of the past five years very carefully, noting every reference to the use of the gold salts. It quickly became evident that the chief source of information lay in the informal reports made by different men to their respective societies, for the formal literature contained not over a half dozen papers on the subject.

By adding the informal to the formal reports we have succeeded in getting together 451 cases of all sorts which were reported with sufficient fullness for analysis.

Four hundred and twenty of the total were cases of lupus erythematosus.

Thirty-one were cases of other diseases, such as erythema induratum, lupus vulgaris, etc.

Analyzing these cases on the basis of cured, improved and failures, we obtain the following results:

	Number	Cure	Improved	Failures
Lupus Erythematosus				
American	319	163 (51.099%)	134 (42.%)	22 (6.89%)
Foreign	101	46 (45.54%)	49 (48.51%)	6 (5.94%)
Other Diseases				
Lupus pernio	3	0	1 (33.33%)	2 (66.66%)
Lupus vulgaris	6	2 (33.33%)	2 (33.33%)	2 (33.33%)
Erythema induratum	8	6 (75%)	2 (25%)	0.
Papulo necrotic tuberculide	4	2 (50%)	2 (50%)	0.
Acnitis	2	0	2 (100%)	0.
Psoriasis	4	1 (25%)	1 (25%)	2 (50%)
Vitiligo	3	3 (100%)	0	0.
Leukemia	1	1 (100%)	0.	0.

It was thought advisable to separate the foreign cases from the domestic for two reasons; first, because abroad they use chiefly 4 amino-2 auro thiophenol carbonic acid, while at home we use chiefly gold and sodium thiosulphate and, secondly, because by division we are able to compare the figures from the two sources.

We note at once that the Americans report about 5.5% more cures than the Europeans. Does this margin in favor of the American investigators mean that the gold and sodium thiosulphate is that much more efficacious, or does it represent merely a difference in standards in reporting cures? The figures for the "improved" cases make it seem probable that the latter is true for the foreign cases reported as "improved" exceed the American figures by 6.5%, which is but slightly more than the American "cures" exceed the foreign. Both sets of figures as to failures are in practical agreement to the effect that the cases not at least favorably influenced by the gold therapy are not more than 6% or 7% of the total.

We may, then, on the basis of the figures at hand, conclude that more than 90% of the cases of lupus erythematosus are favorably influenced by gold therapy. We may not, however, say too hastily that 90% are cured. Ormsby and Goeckerman both voiced this warning before the Chicago Dermatological Society in February, 1929. Said Ormsby[1]: "There have been many brilliant results but, now that time has elapsed, we are seeing recurrences." Goeckerman[2] said that he was having a similar experience. "I think that we never had more than 50 per cent. satisfactory results, and even among these we are now gradually beginning to hear of recurrences." Point is given to this warning by the fact that very few cases are more than one or two months old when reported. Bechet[3] has reported one case with no recurrence in eighteen months and Highman has reported one case with no recurrence in nine months. But these two reports are exceptions. McCafferty[4] has reported a case of recurrence during treatment, as has Shaffer[5]. We shall, therefore, have to reserve judgment as to final cure until more time has elapsed.

In estimating profit and loss we must also take into account untoward reactions. In 266 American cases there were reports of reactions ranging from mild to severe in 38, or 14.3%. That is to say about one in every six patients had some sort of reaction. Two fatal cases have been reported[6]. Also three cases of permanent blindness have been reported, one by Ketron[7] and two by Rulison[7]. Three cases of alarmingly high fever have occurred and at least two cases of stomatitis. The remaining reactions were about equally divided between systemic and focal which passed off without serious results and therefore received only casual mention. How

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many more reactions went unmentioned one can only guess, but the impression received from the reading of the various reports is that they were comparatively numerous.

The remedy used since 1928, in the United States, has been almost invariably gold and sodium thiosulphate. Abroad, 4 amino- 2 auro thiophenol carbonic acid has been the favorite gold compound. According to Schamberg[8], the two preparations differ considerably in their gold content and in their toxicity. He says that the 4 amino- 2 auro thiophenol carbonic acid preparation contains 55% gold and that the highest tolerated dose in white rats is 20 mg. per kilogram whereas gold and sodium thiosulphate contains 38 per cent. of gold and the highest dose tolerated by white rats is 35 mg. per kilogram. Therefore, the 4 amino compound should prove the more toxic. Unfortunately our data are too incomplete and too scanty to justify any opinion on that point.

Experience seems to have brought about a practically unanimous opinion that when using gold sodium thiosulphate it is advisable to begin with a small dose, say 0.025 gm. and by gradual increases to bring the dose up to a maximum of 0.100 gm. Larger doses have been used but it seems to be the consensus of opinion that nothing is gained by the larger dose. Michelson[9] says that the results are as good from small doses as from large.

As yet there are few data available by which to formulate the contraindications for the use of gold therapy. Before the Atlantic Dermatological Conference, Stokes[10] expressed his belief that patients with a white count of less than 4000 were potential candidates for disaster. Throne[11] stressed a high blood sugar and a low chloride content as a contraindication to the employment of the therapy. These findings, he says, are characteristic of the retention of heavy metals like gold, arsenic, lead and bismuth. He advocates the preliminary determination of the sugar and chloride contents in the blood of all candidates for gold sodium thiosulphate. Throne[11] has also indicated that he believes that infections, like abscessed teeth, tend to provoke distressing reactions to gold.

No conclusions can be drawn as to the number of injections necessary to cure or as to the total amount. Cole and Driver[12] (at a meeting of the Cleveland Dermatological Society, April 25, 1929) reported a case in which a single injection marked improvement whereas Bechet[13] reported a patient who, in the course of two and a half years, had received more than one hundred injections and was still under treatment. Apparently each patient and each case is a law unto itself.

As regards the diseases other than lupus erythematosus, in which gold has been used, there is little to say as the figures are so small.

Why it should be used in psoriasis is not clear. Yet gold was used in four cases; one patient is reported cured, one improved and two as failures. It is to be remarked, too, that reactions were frequent and too severe to recommend the further use of the treatment in this disease.

The tuberculosis cases, lupus vulgaris and lupus pernio, showed some result but no more than has been usual in other forms of tuberculosis in which gold has been used.

With erythema induratum, however, the story is different. Eight cases have been reported with no failures, improvement in two and cure in six. With favorable reports coming in we may later conclude that gold is an excellent remedy for this disease.

No less striking are the reports of the four cases of papulonecrotic tuberculides. Here we note that there were no failures to influence the disease favorably. Indeed in one-half the cases cure followed. Here, too, we can only look on with a favoring eye while awaiting more data.

There is a real surprise in the reports concerning the use of gold in vitiligo and in leukemia. H. C. L. Lindsay[14], in reporting three cases of vitiligo, relates how, in every instance, the white patches cleared up under the gold and the pigment returned until neither the eye nor the camera could detect any departure from normal in the once depigmented areas. So, also, in a case of lupus erythematosus with associated leukemia, Schmidt[15] reports that not only was the skin disease cured but the blood condition also. In both vitiligo and leukemia we must await confirming reports before concluding that gold is a sure cure for these diseases.

COMMENT

From this analysis certain impressions are received. The figures certainly show that the gold therapy does at least tend to influence lupus erythematosus favorably but they throw some doubt as to the permanency of the alleged cures. There is significance in the fact that such men as Ormsby and Goeckerman are ready to say that the favorable cases never numbered more than fifty per cent. and now that time has elapsed, they are beginning to see recurrences even in these.

One also gets the impression that accidents are altogether too frequent under present conditions. We know too little about the contraindications to the treatment. When, as at present, one is liable to have an accident, varying from death to blindness or another alarming, if not fatal, reaction, in one case out of every six one can hardly call the method safe. The percentage of accidents is too high.

CONCLUSIONS

One may conclude that

1. Gold therapy does tend to influence lupus erythematosus more or less favorably.
2. Relapses, even in supposed cures, are not very uncommon.

3. Perhaps too little time has elapsed for present accurate judgment as to final cure.

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LACERATIONS OF THE PERINEUM IN FEMALE CHILDREN

Report of Three Cases

BY LOUIS E. PHANEUF, M.D.*

EXTENSIVE lacerations of the perineum in female children are of infrequent occurrence. I have met with but three such cases in the last eight years. In two of them the perineal body and the sphincter ani muscle were torn through; in the other, the laceration had detached the tissues of the vulva on the right, had gone through the perineal body and had bared the anal sphincter without, however, severing it.

Traumatic lesions in this region should be treated as they are in other parts of the anatomy more exposed to injury; that is, all gross dirt should be removed, the parts should be thoroughly cleansed by washing with sterile liquid green soap and warm water and by irrigation. They should then be disinfected with a non-irritation antiseptic solution previous to their repair. The early restoration of the continuity of the lacerated tissues plays a major rôle in the future development of the external genitals in these children. With proper reconstruction the latter should develop normally. Should the healing be left to nature and scar tissue allowed to form between the levators and the torn ends of the sphincter, the results would be defective external genitals when the patient reached maturity. The union of the torn sphincter ends, restoring anal control, is absolutely essential to the patient's comfort.

CASE REPORTS

CASE I. M. F., seven years of age, born in South Boston, was admitted to the Gynecological Service of the Carney Hospital on August 8, 1922. Her father, who accompanied her, explained that while she was watching a ball game and standing on an iron picket fence, she had fallen on one of the pickets; the iron picket had gone through her clothing and had lacerated her external genitals. The hemorrhage had been fairly brisk and upon her admission to the hospital, a short time after the occurrence of the accident, her clothing was considerably stained with blood.

The family history was negative, while the past history revealed that she had had measles, mumps and diphtheria.

Physical examination was negative except for the local injury. Local examination showed a laceration extending through the hymen, the vaginal mucosa, the levator ani muscles and the external sphincter; the rectal mucous membrane was intact. The rectum could be seen bulging between the torn perineal muscles with each deep inspiration.

Operation. Ether anesthesia. The gross dirt was removed with sterile gauze and the external genitals were thoroughly scrubbed with green soap and water; the lacerated wound was irrigated first with a gallon of sterile water and then with a solution of 1-5000 potassium-mercuric-iodide. The torn ends of the sphincter were approximated by two sutures of No. 0 chromic catgut, while the levators were united by three interrupted sutures of the same material; the vaginal mucosa was repaired by a submucous stitch, and the skin by a subcuticular suture of the same catgut. The immediate result was satisfactory.

Convalescence. The child had very little discomfort after operation and remained bright and cheerful throughout her stay in the hospital. No attempt was made to keep her bowels closed; her diet was liquid until an evacuation was secured on the second day; it was then increased to soft solids. The examination on the day of her discharge, August 20, 1922, twelve days after operation, showed practically perfect reconstruction of the parts.

The patient reported for further investigation on November 4, 1922, at which time the following note was made: "The vagina, perineum and sphincter are well healed; the scar is practically invisible. The mother reports that the child has complete control over her bowels."

CASE II. A. B., aged seven, was admitted to the Gynecological Service of the Carney Hospital on September 16, 1924. Her parents stated that a week previously, September 9, 1924, she had been assaulted (raped) by a man and was later found in a baby carriage in a semi-conscious state and bleeding from the vulva. The family history revealed nothing of importance. Her past history showed that she had had measles and pertussis. She probably had had chorea, which had been treated by the family physician. Otherwise the history was negative.

The physical examination was normal in all respects except for the local condition. On admission the temperature was 99.8° F., the pulse 138 and the respiration 18. The urine showed the following—Sp.g. 1028; acid, a trace of albumen; no sugar. Sediment: a large amount of red blood cells and leucocytes. Blood pressure: 90 systolic, 44 diastolic. Examination of the genitals showed a laceration through the hymen, the vagina, the perineal body, the anterior surface of the sphincter ani, the anterior wall of the rectum, the posterior wall of the rectum and the posterior surface of the sphincter ani muscle. The vulva was markedly edematous and ecchymotic. The child was put to bed and the parts were irrigated with saturated solution of boric acid, morning and night, as well as after each micturition and defecation. Nine days after admission, September 25, 1924, the edema had subsided and the ecchymosis had disappeared. The young patient was therefore operated upon.

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Operation. Light ether anesthesia was administered; the external genitals were scrubbed with green soap and water, and irrigated with 1-5000 solution of potassium-mercuric-iodide. The edges of the laceration were freshened; the rent in the anterior rectal wall was closed with interrupted sutures; the rent in the posterior rectal wall was similarly treated. The ends of the sphincter ani, anteriorly and posteriorly, were approximated with interrupted sutures, thus reconstructing the anal sphincter. The posterior vaginal wall was approximated by interrupted sutures, as were the levator ani muscles and the external perineum. No. 0 chromic catgut was used throughout. The primary result appeared satisfactory and the child was returned to bed in good condition.

Convalescence. The convalescence was uneventful except for a rise in temperature. During the nine days before operation the temperature had ranged between 99.8°F. and 101.8°F. After operation the temperature rose to 100.8°F. once. There was no great discomfort and the child seemed bright and happy. She was examined on October 12, 1924, the day of her discharge from the hospital. The vagina, perineum, anal sphincter and rectum had healed satisfactorily and the child had perfect sphincter control. Repeated subsequent examinations during the first year after operation showed a good operative and functional result.

CASE III. B. B., three years old, was admitted to the Orthopedic Service of the Carney Hospital on July 7, 1930. The diagnosis of fracture of the left femur and extensive laceration of the perineum had been established when I saw the child. She had been the victim of an automobile accident and had been hit by the front fender, the edge of which had cut the perineum. The child had had no previous serious illnesses. The physical examination was negative except for the fractured femur and the perineal lesion. After consultation it was decided to repair the perineum first and then put up the femur. An examination of the external genitals revealed a laceration of the perineal body to the sphincter ani muscle, which was bared, and separation of the right labium majus and labium minus from their attachments.

Operation. Under ether anesthesia the genitals were prepared and the patient was operated upon, on July 8, 1930, the operation consisting of the reconstruction of the labia and the perineum. The labia were detached on the right side from a point above the clitoris down to the perineum. A large hematoma had formed. The blood clot was evacuated. The labia were reconstructed with interrupted sutures of No. 0 chromic catgut loosely tied. The perineum was split to the sphincter ani, which was exposed, as well as the anterior rectal wall. The perineum was restored by means of interrupted sutures of No. 0 chromic catgut in the levator ani muscles and the external perineum. The vaginal canal and the urethra were patent at the end of the operation. The fractured femur was put up by the Orthopedic Staff under the supervision of Dr. A. L. Brett.

Convalescence. Ice was applied to the perineum to reduce ecchymosis and edema. The child made a good recovery from the anesthetic. The perineum was painted with 2 per cent. mercurochrome solution after defecation and micturition. On July 12, the swelling and discoloration of the parts were still present, although they were subsiding. On July 20, the patient's condition was excellent; there was no infection and the perineum was healing well. On July 31, the perineum was well healed and showed a very satisfactory result. The child was again examined on August 8, 1930, at which time the vulva and the perineum were solidly healed. She was subsequently discharged from the hospital with an excellent result for her fractured femur.

Summary and Comment. Three cases of extensive injury of the perineum in female children are reported. One child was three years old, the other two seven years old. Two of them were operated upon shortly after the accident. The other, who was seen a week after the injury, was treated expectantly until the edema and ecchymosis of the parts had subsided. The operation was then performed. The operative result was satisfactory in all three patients. Emphasis should be laid on the early repair of these lesions in order to allow the normal development of the external genitals in children so affected.

REFERENCE

Phaneuf, Louis E.: Traumatic third degree laceration of the perineum in a female child seven years old. Report of a case. Boston M. & S. J. 188:256-259, 1923.

HAZARDS INVOLVED IN EXPOSURE TO VINYL CHLORIDE GAS

The United States Public Health Service recently issued another of a series of articles giving the results of studies made in coöperation with the United States Bureau of Mines dealing with the physiological effects of certain new commercial organic compounds. This study treats of the acute physiological response of guinea pigs to air containing vinyl chloride. The concentrations of vapor and periods of exposure ranged from those which produced death to those which caused no apparent effect after several hours' exposure. The symptoms, gross pathology and fatality are given with a discussion of potential hazards.

1. The symptoms are principally those of narcosis. They range from unsteadiness and motor ataxia to incomplete and, finally, complete narcosis. The respirations vary from a rapid, jerky type accompanying the beginning of narcosis to a later, slow, shallow type.

2. The principal gross pathological findings were congestion and edema of the lungs, with hyperemia of the kidneys and liver.

3. Exposure to 20 to 40 per cent. kills guinea pigs in a very short time; 10 per cent. is dangerous to their lives after 30 to 60 minutes' exposure; and 0.5 per cent. is the maximum allowable amount for several hours without acute disturbances of a serious nature.

4. With regard to relative toxicity (concentrations causing acute harm), vinyl chloride is less harmful than carbon tetrachloride and chloroform, and is similar to ethyl chloride.

5. The danger from explosion exceeds the health hazard from exposure.

6. Vinyl chloride gives warning by producing symptoms of dizziness and disorientation in advance of harm, except when present in exceedingly high concentrations which would cause almost immediate helplessness and unconsciousness.

7. The narcotic action of vinyl chloride and its comparatively low toxicity suggest its possible use for surgical anaesthesia.

THE NEW HAMPSHIRE MEDICAL SOCIETY

FRACTURE TREATMENT: CONVALESCENCE AND APPARATUS*

BY FREDERIC J. COTTON, M.D.†

I AM going to discuss first femur fractures. The results obtained from a survey made by the National Fracture Committee were bad. No one knows how bad, because the hospitals of the country have not done enough to make that survey of any definite value; but it is obvious that the results are just as bad as we thought they were, and we thought they were pretty bad. Fracture of the shaft of the femur, while essentially a serious matter, can be handled. There is no difficulty about the gross diagnosis. There is, therefore, no reason to wait for the x-ray examination before using some apparatus, and the application of prompt traction makes a tremendous amount of difference in the end results. You can proceed with some form of traction, either adhesive traction alone, or with a Thomas splint, as soon as you get hold of the case. Even if you have not an x-ray and do not know about the fracture details, you can at least pull the leg back to the proper length, and then when you get the x-ray, you have detailed information.

To get traction in the first place, what do you need? If you have not a Thomas splint, you are out of luck. I have a lot of apparatus here which I am going to call to your attention. I am not going, for the moment, into a complicated set of real tractors. If you have a Thomas splint of this type, put the leg in it and get traction by means of straps. Start traction on the end of the splint attached to the Balkan frame. When you have traction established, you can sling the limb under it with towels or adhesive plaster. If you have not a Balkan frame, you can get along perfectly well with such a device as I will now show on this slide. [Slide shown.]

If you have applied immediate traction and have thus got started, then comes the question of diagnosis in detail with x-rays. If you have a comminuted fracture of the femur, such as is seen in many of the worst accidents, it is unnecessary to do anything except keep on with traction. Usually with these cases sufficient traction can be obtained with adhesive plaster, and such traction calls for nothing but ordinary watching. A good deal of traction may be necessary: you can remodel with a little padding or extra slings. Very often you do not even need to do that, and many fractures in adults can be taken care of without anything more than skin traction under the Thomas splint.

With the more muscular individual that will not be sufficient. Then you may have to have skeletal traction. That is easily applied. Personally, I do not like to apply skeletal traction on the condyles because it often results in a certain stiffening in the knee, but you can easily apply tongs [producing]. With skeletal traction on a fractured femur, you cannot wait too long, or even skeletal traction will not overcome shortening. If it is neglected two or three days, you may not get a usable leg.

As to the tongs, if these are not used within a certain period, you may get caught. We will not mention any names, but there are light tongs that I do not think are worth bothering with. If you are going to use tongs, you want heavy tongs which can be set up with good pressure; otherwise you are simply wasting time. With these tongs you can hold anything that has not been let go too long.

There are certain cases that call for open operations, but not very many. So far as adults are concerned, they come down to just two types: cases in which you feel sure there is something in between the fragments, and cases of transverse fractures in young people. A transverse fracture in older people you can take chances on because an operation is really more serious; but in young people a transverse fracture of the femur is going to be so long in uniting that I always prefer the open operation. Personally, I am doing less and less open operating on the femur, year by year, and I think most of my colleagues also are learning to handle apparatus and learning the importance of extreme care and the rôle of skeletal traction. Skeletal traction will work where other traction, adhesive traction, will not; but, after all, skeletal traction is an operative measure, and, as there is more chance of a chronic infection and a certain amount of trouble, it is something to be applied only by an expert, and I think he would be better off if he did not apply it. The technical advantage is that you can get motion with the knee from the beginning.

[Demonstrates various apparatus.]

Here is another thing which you should have with your equipment, either in the hospital or in the office; that is, the screw-pad attachment for the splint. With it you can get pressure at pretty much any point. A considerable amount of pressure is necessary. I speak of this fact because it is not so well known as it ought to be, and it is an enormous convenience. The convalescent Thomas splint is a great help because

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most of the weight of the body is borne on the ring—the patient is not carrying his weight on the femur. You can very easily with adhesive straps or screw pads get pressure at any point you want. With that type of splint you do not get progressive deformities and you do not get re-fractures. You can safely put the average case of femur fracture with a device of that type in good shape as early as eight weeks, so that the patient can walk around more or less, and there is not any hardship from his being in splints. You have the splint, in which he lies, and when he wants to get up, all he has to do is to have his shoe put on. I suppose there is scarcely a fracture of the femur that I have anything to do with that reaches the convalescent stage without such apparatus.

Next, I am going to say a word or two about fractures of the ankle. Again I will stress the fact that some cases can be gone ahead with without diagnosis if there happens to be any delay about an x-ray, and that this can be done very often with advantage. This class of cases causes us a lot of trouble. For several years I have used a new working classification of ankle fractures which is of great value because, if you stick to it, you can make your diagnosis with sufficient accuracy at once and get reposition immediately, so that your results will be very much better.

Ankle fractures may be divided into four classes mechanically:

(1) Outward displacement: Pott's fracture.
(2) Inward dislocation, or a reverse Pott's.
(3) Backward dislocation with fracture.
(4) Upward dislocation with fracture.

Now, particularly with respect to the first three classes, if you will immediately look at the case, feel of it, and find in which way the dislocation has occurred, in which way it is easy to reduce the dislocation, you have your first diagnosis as nearly as is necessary and you can go ahead with your reduction process by bringing it outward or inward, or forward as the case may be. In this way your case is taken care of so that, as I have said, you usually do not have to do anything more in the way of reduction; you have it all done in the first instance before the ankle has a chance to swell and reduction becomes difficult.

You get very definite deformities from a fracture of the ankle, and in fractures of the third class, if the backward displacement has not been remedied, you get a perfectly definite cripple.

[Slide shown.] These defects can be remedied by operative measures, and I find myself doing this, but it ought not to be necessary; they ought to be reduced in the first place.

[Various slides described.]

With ankle fractures, diagnosis is the first step, reduction the second, and certainly in the first three classes reduction should be immediate and complete. Reduction is most important in ankle fractures. Convalescent care I will come to in a minute, but if they are reduced properly and promptly they will all do well—all except the fourth class, and that I will only mention briefly because the time is limited. This class requires immediate traction or open operation in order to accomplish much, if anything, because the tibia has to be brought down. You have to either put tongs on the os calcis or get traction with an anklet. You can strap this to the foot and it can be so adjusted that you can get traction high up or low down, in any plane, and get quite a number of pounds' pressure very easily. It is useful in the fourth class of fractures and fractures of the leg.

After you have reduced the fractures of these various classes, the usual thing is to put them up in plaster of Paris. That is proper. Here again the convalescent splints are more of an advantage than ordinarily realized. In ordinary ankle fractures the plasters may be removed in six or seven weeks. A little weight can be borne in about seven weeks in all cases properly protected except the fourth class; those take a long time.

With various types of convalescent apparatus, patients are put back into complete action. As a matter of fact, if it seems desirable, the patient can sleep with his shoe on with the apparatus without the slightest damage, and I have had this done in many cases, even if it was uncomfortable. It is more advantageous than otherwise.

I will say just a word in regard to fractures of the lower leg. You all know how damaging they are. Gross diagnosis is not difficult. The first step is to figure out in your reduction what the end result is going to be. I find that there are two or three things that will be constantly forgotten. You have to have your weight-bearing line right, and you have to avoid rotation. I see case after case with a good-looking plaster, where the foot has been allowed to flop over inwardly and the patient comes out "dingtoed". That is simply the penalty of not looking ahead. The other point is to get your weight-bearing line of the leg into something like its normal relation to the base of the foot, if you are going to have a functioning leg. If your weight-bearing line falls to the outside, it does not make very much difference. While you want it quite exact, it does not make very much difference. If your weight-bearing line falls too far back, the man will be clumsy but not crippled. If it falls to the inside and the foot is displaced outward, your patient is usually more or less crippled.

Those are things to bear very definitely in mind. It is not very important whether you have a little jog as I have drawn it, but it is very important if you have that jog and also a deviation with the foot displaced outward. It is not very necessary to have an exact end-to-end approximation, from any point of view, in fractures of

the lower leg but it is important not to have a deviation out into valgus. It does not make much difference if you have a hump, as far as function goes; even a shortening does not matter so much, within reasonable limits.

Now how are we going to secure the best results? In the first place, it means more careful reduction, more careful inspection of all your cases afterwards, and more careful x-ray examination, with a view, not so much to see that they match end-to-end, as to see what the line is, and to get the general position as regards weight-bearing. Get that perfectly in line and correct it if it is not right.

As to after-care of these cases, I am apt to get them, as soon as union begins to be definitely ascertained, into convalescent apparatus. If you have a proper form of apparatus, you can hold any of these cases, and a certain amount of function is a definite stimulus toward union. Given decent reduction in a leg fracture, the only bugbear is non-union, and it is these fractures of the lower leg that keep some of us pretty busy doing chip-graft operations. I will say also that in almost all the ankle fractures and nearly all the lower leg fractures, after you have got the patient beyond the stage of wearing the apparatus, you have to have them exercise joints. You have to be on the watch against flat foot, which is a very common disability.

Next, fractures of the spine. I am speaking of these because they are attracting a good deal of attention just now. They are pretty common, and they are pretty easy to overlook, but are being checked up more carefully of late. A compression fracture of the spine does not mean a complete lesion or a "broken back". It means a compression fracture in which the superjacent weight comes from a fall, or from being pitched forward in an automobile, and it takes a comparatively small amount of violence to cause it. The diagnosis has to be made and the treatment instituted and carried out properly and quickly, or you are going to have trouble. If properly carried out, your treatment ought to be sufficient except for cases of arthritic back, which are rare.

What should be done? Reduction is the first step; then, as soon as possible, x-ray diagnosis. In the case of a fracture, say, between the tenth dorsal and the second lumbar—the patient has been "jackknifed"—if you have not a first-class lateral x-ray picture, you are out of luck. If you are very expert, you can make a diagnosis from the antero-posterior film; if not, if you find this man has a tender place in his back, and has a compression fracture of the spine, he might as well be treated as such until after you can prove it, and it almost always turns out to be that.

What are you going to do about treatment? Reduction is advocated by Davis of Erie, Pennsylvania, in a very nice work recently published. Wm. Rogers of Boston, has been working on like lines. Reduction should be carried out in some cases, and the fracture can be pulled apart. I do not think Davis did that in all cases. Whether it is necessary I am not quite clear. It is not going to be done except by men who are familiar with that work.

What have we done all these years? We have been putting the man with the fractured spine to bed, packing him up as far as he can stand it, higher and higher, with pillows, packing up his back and packing up his lumbar curve in such fashion as not, perhaps, to reduce the fracture but to increase the postural curve above and below, to get more nearly a normal posture. Such correction ought to be kept up for four weeks, anyway, and preferably six, and then you are going to do one of two things. You are going to get him into a jacket, or you are going to get him in a good holding apparatus. If you are going to put on a jacket, there is no use of trying to put it on with the man standing up. You have to have some apparatus to put it on. You can choose either the Children's Hospital sling, or you can have the Goldthwait apparatus, in which the bars can be bent back at any angle in putting the jacket on.

If you want, at the end of a month or six weeks, to get the patient up in apparatus, you can use an apparatus with a strong back brace. You have your curve fitted properly, and the patient can be up and about perfectly well. If properly cared for, with exercise started in about four months, gradually, this type of patient can begin to get out; at the end of six months he will be well on the way to recovery, and with a decent amount of rest and exercise he can get back on the job in about nine months, and be perfectly healed, instead of being crippled as he would be if the damage had not been properly recognized and handled.

A fractured pelvis, unless there are visceral complications, such as a rupture of the bladder, means a break in the bony ring, usually without very much displacement, usually with a tremendous hematoma, and the patient very much knocked out, but for only a short time. Rest is the main treatment until repair is complete. This means a month or two, ordinarily, and, after that, supporting apparatus in the form of a belt.

Now just a word as to fractured hips. I am not going to talk about it except as to apparatus for plaster fixation. We are going to have always the necessity of possessing proper apparatus for such an injury. Not every hospital has a Hawley table; they do not need it. I busied myself, a little while ago, with devising something that should be cheap enough, and simple enough, to have in every hospital, and which, if you wanted to, you could take out in your machine. It has all the essentials

for supporting the head and shoulders of the patient, with a rest for the sacrum and a device to hold the legs. That is all that is necessary. It is something that costs, instead of several hundred dollars, something like $20, and I think the time has come when every hospital that takes care of accidents ought to be in possession of some apparatus of this sort. I do not mean that this is any better than the Hawley table: it is simply cheaper and also portable, and I think it is better than the only other portable apparatus I know, the Lemon machine.

Shoulder fractures are a serious matter. The treatment has changed enormously in the last few years. They used to be hung up for many weeks, before we got any kind of satisfactory motion. We have come to recognize the major shoulder fractures, which includes nearly all of them, as bad cases, and we have come to recognize that they have to be treated with abduction. There are occasional cases which cannot be treated with abduction, but they are almost always, as we see them, cases which have gone so long that this treatment of the fracture will not do. The ordinary case should be treated with abduction. Ordinarily speaking, what you use for traction is a Murray splint by means of which you can get any support you want, and which can be hung up or put on a chair, if you want to, to get your traction on the shoulder with the shoulder in abduction.

A good many shoulder fractures do not need any more reduction than what this does. If you want to put this on and make things a little better by manipulation, all right, but you want your abduction in all cases.

However, you do not want to keep it up very long. You want to get motion of the shoulder *very early*. The one scheme I like best is the Monks-Cotton triangle. I like it best because it is changeable. It is strapped around the body, the straps going around on the other side, and there is a bed of adhesive plaster carried across on which the arm rests in abduction. With this apparatus you get more or less motion started early. The important point is that I get them out of abduction and traction in this way; after about a week, I get them into this abduction triangle for a while, and then get them down into a sling. You cannot bring the arm right down straight to the side; it must be brought down gradually. An Osgood-Penhallow splint is used for a few days, with exercises, and that means active exercises going on. Thus we are starting mobilization usually in two weeks.

The more common form of apparatus is an aeroplane of Zimmer or other type. I do not like them as well as I do this apparatus described above; they are adjustable, and you can do the same things with them, but they are adjustable for height only. I do not think you want to keep the arm up in an abduction position too long. The essential of any apparatus is to get motion started, *early*, under supervision. Those pieces of apparatus are all right, and you will find them in a good many of the hospitals. I have tried to keep away from elaborate things. I see no reason in the world why a small hospital should be burdened with an enormous list of supplies. We in the Boston City Hospital have a chance to fit things out as we want, and I would hate to tell you what I have spent, but there is no sense in it for a small institution, and I am showing you what you can "get by" with.

I will next touch on fractures of the forearm. I speak of these because they are very common with workingmen, very serious, and apt to show pretty bad results. The ordinary treatment by splints gives a great many good results. But as I see these cases, if the arm is a great, brawny muscular one, you have to get at it promptly, and it seems to me it comes down to two methods, neither of which is necessary in slight, slender arms. The forearm bones slip by; you get the pull from the muscles, and you cannot get reduction or maintain it. A lot of these cases can be handled by suspension, an almost unknown method. You can take straps attached to the wrist, or you can get a "bucket-handle" and start traction and suspension with that. Let the man lie on his back in bed and let the weight of the arm pull those fragments apart. If they are not handled that way, these cases too often necessitate open operation.

In fractures of the carpus the results are often serious. Fractures of these bones fall, roughly, into three classes. One of them is not a fracture at all but dislocation of the semilunar. Those cases are operative by choice, in my opinion, always. Another is the fracture of the scaphoid. Some do well under conservative treatment in hyperextension. If that fails, you can take the proximal fragment of the scaphoid out, and after it is out, the wrist is better in a short time. I had one man go back to work in 10 days—not because I told him he could, but he checked out. These fractures can be made to unite if you take sufficient pains to get proper reduction. That cannot always be done. If it can be done, they can be put up in hyperextension. It takes a long while to get them healing, six or eight weeks. I usually put them on a board or plaster, including the fingers. The rule has been in the past to include the fingers for six or eight weeks, but that results in a pretty stiff hand. I have found that if you start with the fingers in extension and then after a little while come back to the familiar "cock-up" splint, it leaves the fingers free and you come out all right. I do not think there is any considerable proportion of failures in those cases provided you do the reduction work promptly.

In the third class, in which the fracture of a scaphoid has been accompanied by dislocation, the proximal end of the scaphoid is rotated forward, and the os magnum is moved backward. I have never seen any good results in

the few cases in which reduction has been accomplished. I have never been able to make reduction in a way to satisfy me. Those are operative cases.

In general, I think we have all got to come down to checking a little more closely. We must be much more careful about having in mind *exactly* what we are trying to do, where we are probably coming out, and how we are going to try to avoid error. I am going to insist on having all the aids we can have; we all need them. We need x-rays, we need apparatus in the hospitals, we need consultation and after-treatment care. We can get convalescent apparatus, and, most important of all, we are going to have—even if it requires some hospital organization, even if it requires much work, and even if we are going to do a good deal of it ourselves—the "follow-up" in these cases. That has not been done in the past. This has got to be done at every hospital, not only in every hospital, but by every doctor, in order to check up on these cases with intelligent care, and the satisfaction of it is not only that you keep out of trouble, but you get for your patients very much better results, because you avoid the accidents which seem to happen so often during the period of convalescence.

I am not going to say anything more except that I have some cases that I want to show as illustrative of two things. In one of them I am not going to say anything except to ask Dr. Rogers to come forward because I want you to see how well he is. He had a real compression fracture of the spine. [To Dr. Rogers.] The first lumbar, was it?

DR. ROGERS: Two, first and second.

DR. COTTON: Do you mind stooping over? [Dr. Rogers bends far forward and then back.] Dr. Rogers had a rather mean fracture with a definite deformity. He went through the regular process and is just as good as new.

There are several other cases here, two of them belonging to Graves and one of them to Jameson. Will you step up here, please?

[Three persons come up on the platform.] This man last July had a compound fracture of both bones of the leg. Dr. Jameson went in and reduced it as he could. The man has a little bulbous deformity, but has a serviceable foot.

This fellow had a compound fracture of both bones. He has, as far as the x-rays show, a little deformity. Dr. Graves got traction on immediately and operated at once without delay. The boy says he is just as good as new, and the results as shown in the x-ray picture do not show any difference.

Now this man illustrates a little different point. He had a compound fracture which was pretty hopeless. He got messed up, and the lower arm was all knocked to pieces, with several fractures of the ulna. Dr. Graves got at the man promptly, and he has just a little tender scar there which amounts to nothing. The point is there was *no waiting*. Dr. Graves recognized that what he was trying to do was to make an arm to use, and this boy now has perfectly good rotation of the arm and has an astonishingly good hand. I think Dr. Graves should be congratulated for having immediately recognized *exactly what he was trying to do;* the one thing we want to have constantly in mind in fractures is *exactly what we are trying to accomplish* in order to bring back normal function.

DISCUSSION

DR. CARLETON R. METCALF, Concord: When I was an officer in the British Army, in 1916, I was presented with 138 splints and told that each splint was named after the man that invented it and that I was supposed to know how to use them. When the American Army went into action, the number of splints was reduced to seven or eight, and each doctor and each orderly was thoroughly instructed in the use of these. Now it is interesting that many of the splints popularized during the war have survived, and that they form more or less the armamentarium of the average practitioner today,—for instance, several of them that Dr. Cotton has described to you—the Thomas type for the leg and arm, the Balkan frame, the ambulatory splint, the tongs—first popularized by Pierson of South Africa,—together with bone plates and, of course, the ever present plaster of Paris. I am happy to say that I have two on the list that Dr. Cotton did not mention, namely, the T splint for a clavicle and the Steinman pin.

All of these we use not only to get proper adjustment of the fracture, usually by leverage rather than by pressure, but also to get the position of choice which will bring about the integrity, in so far as it is possible, of joints and muscles. And that was what Dr. Cotton had in mind, I believe, in speaking of his shoulder joints which were put up in abduction, not only to get alignment of the bones but also to get full eventual movement in abduction by preserving the deltoid muscle.

So far as the Thomas leg splint goes, it is well to remember that too much pressure on the groin is painful, and that you can overcome it usually by elevating the foot of the bed. Whether you use weights or a windlass is a matter of choice—perhaps weights are more foolproof; but it is perfectly true that you have got to be prepared to use very heavy weights, and if the fracture, when it reaches you, is two or three days old, it may be either impossible or very difficult with weights to bring that fracture down so that the bone ends will pass.

I was called in on a case, last year, of a boy of 16, who had a fractured femur about three days old, and I could not bring his thigh down;

I could not overcome his muscle pull with 35 pounds of weight. Perhaps I could have done it with 50.

The Balkan frame is useful, not only in the case which Dr. Cotton cited of the double forearm fracture, but it is also useful in such a case as we have in the hospital at present, where we have not only a double forearm fracture but a fracture of the shaft of the humerus; in such instances it is possible to pull the humerus outward and to have the forearm up in the air in order to get traction on the two broken bones of the forearm; in that way one can very well get good alignment in all three fractures.

So far as walking splints go, in this country it seems to me we are more conservative than they are in Europe. Personally, I always use them in fractures of the tibia and the fibula, and I very often have my patient wear a walking splint for at least six months. I am always careful to have the cuff of the splint opposite the site of the fracture. These splints are particularly valuable, as Dr. Cotton says, in cases of delayed union, which are sometimes due to interposition of fascia and probably more commonly due to circulatory disturbance in the tibia. We may try erroneously to attribute these delayed unions to syphilis, and in a somewhat futile fashion try to aid by the use of cod-liver oil and lime salts.

So far as the tongs go, I have used them for the humerus and for the femur. I like them pretty well for a low femur fracture, one of the kind where the gastrocnemius pulls the lower fragment backward and you have an awful time getting it up into position. I have used them just above the knee joint in order to have motion in the knee joint and motion in the leg, after the method of Pierson. Dr. Cotton has apparently had trouble with that.

The Steinman pin I find particularly valuable in the low fractures of the tibia and the fibula. This pin, with which some of you may not be familiar, is a pin which can go either above the os calcis or through it, preferably through it, and it separates in the middle for the purpose of being taken out readily. In most of those cases it gives good traction, particularly in a low fracture of both bones, the kind you get in a motorcycle accident, where the man riding on the motorcycle bumps into a truck or something and comes in with the lower part of his leg thoroughly damaged.

I use bone plates freely, sometimes as a temporary expedient. I used one last year in a pathological fracture through a bone cyst high up on the femur, because the principal fragment persisted in sticking out at right angles like a sore thumb. There was practically nothing to hold, and the bone plate stayed in place only about a week, but it was sufficiently long to get those two ends approximated so that they would stick. That plate, of course, came out at that time.

I use plates sometimes in compound fractures, in the type, for example, to which I just referred as the motorcycle fracture. Compound cases I have treated by three procedures: first, a thorough débridement; second, bone plate; and third, Dakinization, a combination of methods which was first described, I think, by Sherman of Pittsburgh; and I have gotten away with it in bad cases. The most important of the three procedures is the débridement, which must be absolutely sure.

In clean cases, I often leave bone plates in permanently. They should, of course, come out if there is inhibition of the growth of callus, if the plate is on the shinbone where it is apt to be painful, or if the plate breaks—and I have here an example of that very kind of dilemma, where a plate which was too thin was put on the femur and broke in a couple of days; and the lesson learned from that is to use a stout plate. About 20 per cent. of my bone plates come out and about 80 per cent. of them stay in. Occasionally I have gone in to take out a bone plate and found it so thoroughly buried in callus that I have turned about and left it.

However absurd we may think some of the promulgations of Arbuthnot Lane, I believe we ought to take our hats off to him for the emphasis which he places on cleanliness in bone work. Cleanliness, economy of trauma, loose closing, and fairly firm fixation are the secrets of success in bone plating, and in being able to leave your bone plates in.

Nearly all fracture cases come to plaster of Paris sooner or later. With an open wound, if it is dirty, bridge it; and if it is clean, close it. Don't hesitate to leave silkworm gut sutures under your plaster; I have repeatedly left them in for weeks without any trouble.

I think I use less padding for my casts than a good many men do. I always split them when they are put on, for two reasons. The first one is that it splits more readily when it is soft, and the second one is that two or three years ago I had a bad slough from a cast which I did not split.

Now, so far as convalescence goes, I have just one word to say, based on practical experience, and that is, if your fracture is a difficult one, have plenty of x-rays, and secondly, have plenty of consultations. Later on, if some doctor inadvertently says that your patient has a grievance, these two things, x-rays and consultations, are very valuable when you are called on to stand up in the witness box and tell about the case before twelve good men and true.

DR. EZRA A. JONES, Manchester: I think that Dr. Cotton may be forgiven for coming up here and scolding us regarding our treatment of fractures in view of the fact that he has been called on quite frequently, for the last two or three years, to help us out of our difficulties.

I wish to call your attention to a fracture

record which I believe we should all use in our fracture cases and which would relieve us of a lot of trouble if we would fill it out completely. This is a record sponsored by the American College of Surgeons and really acts as a guide for each step in the treatment of fractures. It starts off with the first day of the fracture and has space to fill in a description of the bone fractured; site, type of fracture and the injury to the soft parts, including nerves and blood vessels, then it takes us on to the x-ray examination before the reduction. Following this, the treatment is written down, whether an open or closed reduction, the type of splint used, and what aseptic precautions were employed, if it is compound. We then come to the results after reduction—whether they are good or poor. There is also space for the first, second and third attempts and the results obtained after each treatment.

I think that we should consider every fracture as the possible beginning of a lawsuit; if we do this, we will probably get better results. If any of us are hurled into court and we are able to show a record of this type properly filled out, the twelve good men and true, in whose hands Dr. Metcalf states his fate rested, will find us as innocent as they did him.

DR. COTTON: I have very little to say, gentlemen. About the Thomas splint, as to windlass traction versus weight traction, I think windlass traction alone is probably dangerous. I have seen a good many cases of slough. I believe we are going to use the Thomas splint, and you have got to have some arrangement by which you can use windlass traction for tightening up the leg in the splint, and then putting the end of the splint slung to the Balkan frame. But in one fashion or another, get your weight traction on the *end* of the splint, and then drag it down and sling it upward, instead of dragging an upward hump into it. That is a detail.

The Steinman pin I have used many times. I have grown to dislike it a little because, if you do get a mild grade of infection, you get a wound which is very difficult to heal—it goes both ways, and it takes a long time to clean up. I have seen two cases in the last couple of weeks with trouble attributable to tongs. They are very nice to use, but are to be used with caution and reserve.

Bone plates I used to handle just as Metcalf does, but I have of late been taking my plates out as a routine matter. I think, perhaps, what made me change in that regard was a case in which there was a fracture through the screw-hole of the bone plate some years afterwards. It was not one I put in. It was all right, perfectly clean, no particular reason why it was weak, and it happened from very slight trauma. I have always felt they were better out because in a good many instances they impede the formation of callus.

Plates in compound fractures: Metcalf can get away with them most of the time. The only essential is that you select the favorable cases. I have found one thing that has not been mentioned heretofore, which usually takes the place of a bone plate, and that is the Smith bone clamp. You can use that with fractures of the shaft, get it into place, clamping these arms around the bone and they are sent home with a little care, and it works out very well. I do not think any of us know quite how to clean out compound fractures. A good many of us have the feeling, however, that beyond cleaning up, the less we cut, the less chance there is of sepsis.

MISCELLANY

PERIODIC HEALTH EXAMINATIONS

Editor, *New England Journal of Medicine*,

No one questions the great value to the individual patient of periodic physical examinations, but it seems not inappropriate to appraise the glib and rosy promises made to the laity by the medical profession as to the real value of such health audits. Are we not in danger of "overselling" the idea, when we may unwittingly produce unfavorable reactions to a most commendable but apparently limited public health measure? One is led to a thoughtful scrutiny of the value of the average examination when he meets with a situation like this:

A business man of 57 was operated on for acute intestinal obstruction due to carcinoma, a cecostomy only being advisable. He died 5 weeks later. His history showed an unusual degree of solicitude for his health, and within three months he had been examined by two metropolitan internists who had radiological data to confirm the opinion that he needed only "more rest and more sleep".

A lawyer was given a thorough examination, without, however, chemical or radiological study. The only symptoms which had led to the consultation were malaise, slight loss of weight and constipation which had lasted for some years. Six months later he died from carcinoma of the splenic flexure of the colon, after an exploratory operation.

The New England Mutual Life Insurance Co. recently studied a group of death claims of policyholders insured less than 3 years, all of whom were "accepted at standard rates, all believed to be first-class risks". All died of circulatory disease, in less than 3 years after last examination. Eight of these individuals were examined by the chief medical examiners.

Examples such as these could be multiplied, but I believe the point is established that the periodic examination is not without limitations unappreciated by the public and apparently by many vociferous members of our own profession as well. Such examples do not detract one bit from the value of the examination but they do lessen the value of dogmatic statements to the patient, based on the examination. Unless we are decidedly critical of

methods and results, we can but create a baseless sense of security.

Until we can depend more on our ultra-modern methods of examination in doubtful situations, until we can get people to submit to the trouble of a *complete* physical examination, our pronouncements to the laity should be pitched in a bit lower key. A complete physical examination is plainly something more than a sketchy history and the usual tongue-depressor-torch stethoscope survey. It cannot in any way be compared to financial audits—unless one admits that its conclusions are based on an audit in which a portion of the accounts are concealed. Yours truly,

February 6, 1931. FRED ELLSWORTH CLOW, M.D.

NECESSARY HOSPITAL BUILDING ADVISED

Hospitals rank as the fifth industry in the country from the point of view of capital investment.

If the governing boards of hospitals will give attention to repair and construction they can benefit their own institutions and at the same time needfully increase employment.

These were two of the cardinal points stressed by Dr. Paul H. Fesler, superintendent of University of Minnesota Hospitals and president-elect of the American Hospital Association in a radio talk Tuesday, February 17 under the auspices of the President's Emergency Committee for Employment, Colonel Arthur Woods, Chairman.

THE COMMUNITY HEALTH SERVICE

At the recent annual meeting of this organization Miss Florence M. Patterson, general director of this organization, reported that notwithstanding that 1930 has been shown to have had better health conditions than ever before the nursing work of the Association increased three per cent. which indicates that the people of Boston are showing increasing appreciation of the work of this organization as indicated by the fact that 42,608 patients were cared for and 353,478 visits made in caring for fifty-two per cent. of acutely ill, five and four-tenths per cent. for chronic cases, thirty-five and three-tenths per cent. for maternity cases and seven and three-tenths per cent. were in need of corrective work. The major service was among children of whom forty per cent. were under six years and fourteen per cent. between six and fifteen. The nurses gave prenatal supervision to more than one-third of all women who gave birth to children in Boston.

Receipts for paid service decreased one per cent. for partial cost and five per cent. when the visits were paid for by insurance companies.

CHANGES OF ADDRESS

Dr. Bruce Kelly from Whitefield, N. H. to Colebrook, N. H.

Dr. Wilhelm R. Schillhammer from Burlington, Vermont, to Groveton, N. H.

DEATH

Dr. Howard A. Hannaford of Newport died at his home February 9 after a brief illness. He was 56 years old and a graduate of Baltimore Medical College 1900.

MORTALITY RATE

Telegraphic returns from 81 cities with a total population of thirty-six million for the week ending February 14, indicate a mortality rate of 14.0 as against a rate of 13.4 for the corresponding week of last year. The highest rate (24.1) appears for St. Louis, Mo., and the lowest (4.8) for Flint, Mich. The highest infant mortality rate (15.9) appears for Fall River, Mass., and the lowest (14) for Worcester, Mass.

The annual rate for 81 cities is 14.2 for the seven weeks of 1931, as against a rate of 13.2 for the corresponding weeks of 1930.

OBJECTIONS TO THE PASTEURIZATION OF MILK

Representative Joseph D. Rolfe of Newbury, Massachusetts, entered a protest against the recommendations of the Commissioner of Health with respect to pasteurization of milk, at a hearing before the Committee on Agriculture and Public Health sitting jointly February 26 on the ground that milk shipped into the State may not be subject to the same regulations as would be required by the recommendations of the Commissioner.

To public health officials it seems strange that there should be any objection to all measures designed to reduce the incidence of tuberculosis.

It seems too often that the eradication of disease is not given adequate consideration in its relation to finance. This, however, is, we trust, only due to the misunderstanding of the great importance of preventive medicine. Advance in the promotion of health has had to meet opposition all along the line.

Even Pasteur was opposed and ridiculed but his service to mankind has stood the test of time.

We believe that the objections of today pertaining to the control of disease will eventually like the proverbial Arabs fold their tents and as silently steal away.

VERMONT STATE MEDICAL SOCIETY

THE DIAGNOSIS AND TREATMENT OF THE CARDIAC ARRHYTHMIAS*

BY CLARENCE H. BEECHER, M.D.,† BURLINGTON, VT.

THE order that has come out of the previous chaotic condition of the cardiac irregularities is largely due to the electrocardiograph.

The findings with that instrument have been checked so well with clinical and pathological studies that we can now recognize most of the conditions without the instrument. That is, with the history, symptoms, physical examination and the information derived from experience, we can be sure in the majority of cases of the classification of an irregularity of the heart's action.

I do not wish to say that we should not use all means at our command in diagnosis, but rather to emphasize that many of these irregularities are diagnosed correctly without resort to the electrocardiograph provided that all other methods of study have been used.

a. AURICULAR FIBRILLATION

This condition is seen typically in a patient with known mitral disease who has cardiac decompensation, dyspnoea, venous stasis, cyanosis, and edema, plus a rapid, irregular, disordered heart action and pulse.

This condition of gross irregularity is often transient, but usually permanent. It is due primarily to complete absence of the normal contraction of the auricle. The walls of the auricles stand in diastole, and the surface of the walls is the seat of rapid undulations, irregular in their path and averaging about four hundred fifty per minute. A similar condition of the ventricles would cause death at once. The tissue which transmits the impulses from the auricles to the ventricles will carry only about two hundred per minute, and some of these may be blocked, so that the resulting rate of the ventricle is usually considerably below two hundred, and the strength of the ventricular contraction varies even more than the rate, so that only an irregular number of the waves reach the wrist as pulse waves. This variation in number and strength is usually more marked at the apex than at the wrist. The ventricular contractions maintain the circulation.

This irregularity of heart action is the commonest one, comprising nearly half the total irregularities.

It usually has myocardial changes as its pathological basis, and its presence may be regarded as an indication of general cardiac involvement.

Once present it usually persists for the rest of life. Eventually death results from the ventricular involvement, though this may be long delayed, sometimes a matter of years.

Diagnosis: The pulse alone is often diagnostic, though the rate at the wrist is usually less than at the apex and this comparison should not be overlooked. The characteristic feature is the absolute irregularity of beats. The beats vary in force as well as rhythm. This can be well shown by the varying systolic pressure of the several beats, and the pulse deficit, which is present only in this type of irregularity, and premature contractions. Exercise, fever and drugs increase the rate and the irregularity. Rest decreases it. Decompensation with an obvious cause for the myocardial involvement is usually present. When the apex rate is over 120 and irregular, the irregularity is usually of this type. No matter why the rate is above 120, if the irregularity persists the diagnosis of fibrillation is justified—the higher the rate the more certain the diagnosis. It is the usual terminal event in mitral disease and when it is present, the presystolic (or better auricular systolic) murmur cannot occur.

Treatment: The results of treatment will depend on the condition of the heart muscle itself. *Rest* is essential, especially so if the ventricular rate is fast, essentially so if medication is to be prescribed. Opiates may be necessary to secure adequate rest. *Removal* of the cause is to be accomplished in the few cases where this is possible. *Digitalis* is indicated for two purposes, *first* to block the response of the ventricles to the rapid auricular stimuli and so slow the ventricular rate, and *second*, to improve the ventricular contractions themselves. Various plans and preparations are used. *The dosage usually employed is not sufficient.* Enough of the drug should be given to accomplish the desired effects. The rate should not as a rule be reduced below seventy if afebrile, or 100 if febrile conditions are present. It is usually necessary, after the rate is slowed, to continue the drug in an amount equal to that which is excreted daily (20-30 m. of the tincture) to maintain the effect, especially when rest is suspended. More may be necessary to maintain the rate at which the patient does best.

Strophanthin may be used intravenously when an immediately rapid effect is needed and digitalis has *not* already been used.

Quinidin Sulphate may be used in the cases

*Read at the Annual Meeting of the Vermont State Medical Society, October 2, 1930 at Burlington.

†Beecher—Professor of Medicine, University of Vermont College of Medicine, Burlington, Vermont. For record and address of author see "This Week's Issue", page 515.

without congestive failure, provided it is tested out and carefully supervised.

Other measures such as venesection and purging may keep the patient alive long enough for these measures to bring about their therapeutic effect.

b. AURICULAR FLUTTER

Clinically a regular heart rate of 120 to 180 is occasionally seen, more likely in middle and advanced age, constant under varying conditions and tending to persist months or years and without apparent cause. Auricular flutter is a condition of rapid auricular contractions with imperfect coördination of the ventricles. The rate of the auricles may be 240 to 360 and usually there are enough blocked in the path between the auricles and ventricles so that the ventricular rate is half that of the auricular. The undulations in this condition are regular in their path and less rapid than in fibrillation.

Diagnosis: The suggestive conditions are the long duration and constant rate. Posture, rest or exercise do not influence this abnormal behavior. Pressure on the vagus may slow the ventricular but does not influence the auricular rate as shown by the continued jugular pulsations. Auricular flutter occurs usually in degenerative myocardial lesions. Physical examination shows a tick-tack rhythm (systole and diastole of the same length and the sounds both valvular) and there may or may not be evidence of advanced cardiac failure.

Treatment: Digitalis may in some cases be given in sufficient dosage to secure digitalization, in order to produce fibrillation After the drug is stopped the normal rhythm may appear. This is more likely to result if marked slowing has been produced. Quinidine Sulphate is used but it is subject to all the precautions needed in the administration of this drug because it is less readily controlled than is digitalis.

c. ABNORMAL SINUS RHYTHMS

The rate of the heart is the balance produced between the impulses formed by the pacemaker (sino-auricular node) and the restraining control of that rate by the vagus.

1. *Sinus Tachycardia.* Simple increase in rate is the commonest change in rhythm. It follows both physiological and pathological stimuli. It shows no other variation. It begins and slows gradually. Its importance lies in the location or determination of the cause. It will be rare that digitalis will be needed for diagnostic use, since if the tachycardia is due to cardiac decompensation, other evidence of that condition will be evident.

Treatment: No drug is of direct value in simple tachycardia. Various drugs act indirectly on the heart rate by their effect on the cause of the tachycardia, for example the influence of iodine in thyro-toxicosis.

Digitalis, in amount necessary to block impulses in healthy tissue will usually be required in more than toxic doses.

2. *Sinus brachycardia.* This is less common than the simple increase in rate. It is seen commonly in convalescents, after fasting, and in physical and nervous exhaustion. It occurs through vagal control largely. Atropin may be used to remove this inhibition and so differentiate a slow rate of vagal origin. A slow rate due to block will not be influenced by atropin and is ordinarily below fifty, while the sinus brachycardias are above that rate.

Treatment: Rest is most important. Usually there is not satisfactory response to direct medication.

Thyroid extract in thyroid deficiency is an example of indirect medication for slow rates.

The prolonged administration of atropin is not advisable because of certain ill effects.

Adrenalin and ephedrine may be of use if low blood pressures are also present.

3. *Phasic Sinus Arrhythmia.* Clinically seen in the young when breathing deeply. There is an irregularity in rhythm in this condition which accompanies inspiration and expiration. This is important from the standpoint of correctness of diagnosis and avoidance of cardiac therapy. It is a physiological accompaniment of youth. It depends on the tone of the vagus: with inspiration there is temporary lessening of control by the vagus and an increase in rate; with expiration a deepening of control and a slowing of the rate. Nervous children may show this to a degree alarming to their mothers and to the uninitiated. No treatment of the heart is indicated. Atropin, exercise, fever or any increase in rate usually abolish this irregularity.

d. PREMATURE CONTRACTIONS. (Extra Systoles)

This is one of the common conditions. Clinically a separate disturbance occurs in that one of the serial *pulse waves* is lost. It intermits,—and this is usually perceptible to the individual. The heart beat at the moment of the disturbance appears before the rhythmic beat is due, and this early beat, which is usually not sufficiently strong to produce a pulse wave, is followed by a pause of unusual length.

If a stimulus is applied to a normally beating ventricle during its diastole and before the normal stimulus is due the ventricle will respond with a premature contraction.

If a stimulus is applied during the contraction there will be no response.

When such a premature contraction is produced by an extra stimulus, the total number of beats is not increased, but the premature contraction is followed by a pause which is ended by the occurrence of the next regular contraction. This pause exists because the normal stimulus following the premature stimulus reaches

the ventricle during its contraction and it then cannot respond, and the next ventricular contraction does not occur until the following normal regular rhythmic stimulus from the sinus occurs.

It is evident that there is no beat gained and there are no extra systoles in the sense of additional beats.

The premature beat is not an efficient one, and may or may not produce a pulse wave at the wrist, or even open the aortic and pulmonic valves.

The subjective symptoms vary usually in degree with the nervous irritability of the patient. Some complain only of the strong beat which follows the long pause.

Diagnosis: The arterial pulse is distinctive—the regular rhythm is interrupted by a premature small wave, and a long pause, or the absence of a wave, equalling a normal cycle—they usually disappear with increased rate. Exercise may be used to increase the rate, as a test.

On auscultation of the heart the regular sequence of sounds is interrupted by two short sharp sounds or by only one, if the premature contraction is ineffective in opening the aortic and pulmonary valves.

They occur at all ages and under many conditions, being both functional and organic.

There are several classes: 1. *Life long;* 2, In the *neurasthenic* and *debilitated;* 3, *Toxic*—tea, coffee, tobacco, diseases and digitalis; 4, *Reflex irritation;* 5, *High blood pressure;* 6, *Organic Cardiac disease.*

Several different causes may be present in one patient.

Treatment: This depends on the cause which is to be removed if possible.

It is usually made worse by cardiac tonics, especially strychnine and digitalis, and improved by sedatives and reassurance. Atropin usually works well but has to be stopped after a short time on account of other effects. Quinidine may be resorted to if there is no relief otherwise, but subject to all its limitations.

e. PAROXYSMAL TACHYCARDIA

Clinically paroxysmal tachycardia is seen as an absolutely abrupt increase of regular heart beats, which persists for a variable time, even days, and which terminates in an equally abrupt manner, to recur at longer or shorter intervals. The rate usually varies from one hundred and eighty to two hundred or more. The heart is regular and the rate is uninfluenced by exercise or rest. The onset may be initiated with and followed by one or more premature contractions, noticeable to the patient.

The exact origin and cause usually are obscure.

Diagnosis is made by the history of the attacks, the abrupt onset and abrupt termination, and the negative physical findings during the paroxysms. There may be faintness, precordial distress and anxiety during the attack.

Treatment: Pressure on the vagus in the neck at the level of the bifurcation of the common carotid, and sometimes on the eyeball may arrest the paroxysm.

Digitalis usually has no influence on the attack but may be indicated in the cardiac failure which may result from a prolonged attack, or as a prophylactic against further attacks.

Quinidin Sulphate may also be used.

Many patients know some maneuver which will stop *their* attacks.

Sedatives may be necessary to produce sleep and rest.

f. HEART BLOCK

Clinically this is evidenced in a case where the pulse is occasionally dropped and at the same time the heart sounds are absent throughout the whole of the pause. It is shown also in other ways, especially by exceptionally slow rates.

The response of the ventricle to the impulse from the auricle coming through the bundle of His is delayed or fails entirely and the ventricular rate and the pulse are correspondingly influenced.

Various anatomical changes have been found in the bundle when block has been present. Block has also been present when no such lesions were demonstrable in the conduction system. Block is one of the results desired in the use of digitalis in fibrillation.

Diagnosis: Partial block may be accomplished by no subjective symptoms and few signs other than a slow pulse or an occasional skip, and not diagnosed without the cardiograph. Complete block usually produces more evidence to make one suspicious; these are, a slow irregular pulse, usually below forty, often below thirty, and weakness and dyspnoea on exertion.

If in addition there are fainting attacks, muscular twitchings, epileptiform or apoplectiform seizures (the Stokes-Adams Syndrome) the diagnosis is quite certain. This can be made definite in various ways. The jugular pulse shows the auricular rate, and the auricular contractions may sometimes be heard by auscultation, or seen with the fluoroscope, contracting more rapidly, usually two or three times to one, of the ventricles, the rate of which corresponds to the apex beat and the arterial pulse.

Treatment: Atropin may increase the ventricular rate and adrenalin or ephedrine may be used to maintain it.

Barium chloride seems to be of use especially in the cases of partial block.

Myocardial weakness demands the same care as ordinarily exercised.

g. PULSUS ALTERNANS

Clinically, if in a case of chronic nephritis, or arteriosclerosis with high pressure the pulse varies in force so that every other beat is rela-

tively weak, the case is one of alternation. It is usually associated with severe heart strain or widespread myocardial deterioration.

Diagnosis: It is best recognized by alternating weak and strong beats at the radial pulse. The blood pressure instrument is helpful in this examination, since you can adjust the pressure to halve or double the rate below the cuff.

Treatment is of the underlying condition. Rest as in all real myocardial weakness, is of paramount importance.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

JANUARY, 1931

The epidemic of chickenpox noted during the last two months has continued with 240 cases reported this month. This disease has not been severe at any place and the principal difficulty occasioned has been the difficulty in regard to the maintenance of school attendance. The same thing has been true in regard to whooping cough, of which 93 cases have been reported. The smallpox situation seems to be considerably improved, the Highgate cases being entirely over and those at Shaftsbury now well quarantined. The Shaftsbury cases were so mild that it was very difficult to recognize these at first, with the result that a large number of exposures occurred. Quite widespread vaccination has been done in all that vicinity.

The following is the list of communicable diseases reported during January: chickenpox 240, diphtheria 9, measles 107, mumps 68, scarlet fever 33, smallpox 17, typhoid fever 1, undulant fever 1, whooping cough 93 and tuberculosis 17.

The Laboratory of Hygiene made a total of 1,517 examinations in January, classified in the following manner:

Examinations	
For diphtheria bacilli	217
For Widal reaction of typhoid fever	26
For malarial parasites	1
For tubercle bacilli	239
For evidence of syphilis	422
For gonococci in pus	112
Of blood for contagious abortion in cattle	114
Of water, chemical and bacteriological	45
Of milk, market	131
Of milk, submitted for chemical only	0
Of milk, submitted for microscopical	13
Of water, bacteriological	142
Of foods	3
Of drugs	0
For the courts, autopsies	4
For the courts, miscellaneous	7
Autopsies to complete death returns	0
Examinations—Miscellaneous	41

The Division of Communicable Disease received reports of 27 cases of gonorrhea, 26 cases of syphilis; distributed 369 Wassermann outfits and 157 slides for smears.

After-care Infantile Paralysis Division reports 24 patients seen, 23 home visits made, 9 pieces of apparatus fitted, 4 pieces of apparatus repaired, 26 orthopedic corrections made to shoes, 11 patients admitted to the Fenway Hospital and three discharged from this hospital.

The State Advisory Nurse of the Maternity and Infancy Division made eleven visits to seven towns, speaking to representative groups of the League of Women Voters, State Legislators and Parent Teachers' Associations. Requests are being received for the course of Child Care and plans are being made to start this work.

THE NATIONAL HEALTH COUNCIL AND ITS AFFILIATED ORGANIZATIONS WILL OCCUPY NEW QUARTERS

During the last ten years the American public has shown greatly increased attention to personal hygiene, while the medical profession and other public health workers have been laying much emphasis upon the tremendous possibilities for prevention of diseases and premature deaths. This trend toward "prevention rather than cure" since the World War has been responsible for the steady growth of the National Health Council, which celebrates its tenth anniversary here this month, according to Thomas C. Edwards, Executive Officer.

Expansion of the Council's work and the development of numerous activities among its 15 constituent members has resulted in the signing of a lease for larger office quarters. The headquarters of the National Health Council and those of nine of its constituent members which share office space with it on a coöperative plan will move, April 1, from 370 Seventh Avenue to the new Nelson Tower Building, 450 Seventh Avenue, New York City. The Council's home had been in the former building since the organization was formed in 1921.

The National Health Council and its member organizations will occupy the 11th to 15th floors inclusive; these organizations include:

American Child Health Association
American Heart Association
American Public Health Association
American Social Hygiene Association
National Committee for Mental Hygiene
National Organization for Public Health Nursing
National Society for the Prevention of Blindness
National Tuberculosis Association
Foundation for Positive Health.

Space in the same building has been contracted for by the National Social Work Council, a coöperative group of 22 national social agencies, and by the following other organizations:

American Journal of Nursing
American Nurses' Association
Committee on Grading of Nursing Schools
National Health Circle for Colored People
National Amateur Athletic Federation (Women's Division)
National League of Nursing Education
National Probation Association
New York State Nurses' Association.

SUDDEN BLINDNESS AT FIFTY

BY HILBERT F. DAY, M.D.*

EARLY in January of this year my brother suddenly became completely blind. Immediately many questions arose. How should his friends and family approach this new problem? What hope for an independent life could be held out for him, and how could he be helped to rise above this tragedy? A man endowed with bravery and intelligence naturally would immediately begin to plan for a future, and my question was how could I help to prepare for it.

In seeking advice on this subject I consulted Miss Lucy Wright, connected with the Social Ethics Department at Harvard, and formerly eleven years with the Commission for the Blind in this State. Miss Wright took the matter under advisement and subsequently wrote me the following letter. Some of the facts she mentioned in it immediately proved true. For instance, the desire of my brother to talk understandingly with somebody about his new handicap; also, the annoyance he felt at people who thought that to make him hear they had to shout at him, when actually his hearing was more acute than formerly. Following Miss Wright's advice he was made happier and was able to bravely and cheerfully face the future.

I believe that there are many doctors, social workers, and lay people who may be helped in their attitude towards those who have become suddenly blind by reading Miss Wright's letter; and, therefore, with her permission I am publishing it with this note.

January 30, 1931.

Dear Dr. Day:

I promised to write you something of my experience with men and women who have faced sudden blindness in middle life.

My points are these:

I. Problems of the person suddenly blind,—Their greatest suffering is no doubt mental and arises not so much from the fact of not seeing as from,—

1. Fear of personal dependence.
2. Fear of economic dependence.
3. Lack of faith in other senses.
4. Lack of faith in the possibility of ever finding a recognized place of usefulness again.

II. Corresponding needs of the person suddenly blind,—

1. Reassurances of security in affection of friends and family.
2. At the same time, help in making every step in convalescence count towards personal independence.
3. Relief from anxiety—as to economic security for family and self.
4. Early discovery of something to look forward to, even if it is tentative—and when possible, finding some "long run" plan that holds promise of bringing a recognized place of usefulness with it.

In one sense I cannot even try to answer your question as to a best plan of reconstruction. In my experience no two people take the blow the same way—and no one can foresee the order of the psychological stages or the swiftness with which the patient may go through them.

Some men faced with sudden blindness have curiosity about the way out and set to work at once (when they have faced the fact and believe they cannot be cured) to fight for their own independence. Others have to be convinced even that they can tell time by their own watch (having the crystal removed and touching the hands —or later by getting a watch with the hours indicated by raised points)—and convinced that by maintenance of order as on the table by the bedside or throughout the room (placement of chairs, etc.) they can master that area by touch and sense of direction. The good nurse or friend helps independence to come about simply and naturally, takes it for granted—or if it is discussed, discusses it in a matter of fact way and with a light touch. The great thing is to help the patient to get a sense of comparative freedom in moving about and waiting on himself as soon as possible.

In this matter of order (always having things in their familiar places) progress depends on those near as well as on the patient. The blind, I am sure, are happiest in their blindness, where their handicap is sufficiently understood to be taken for granted and so may be forgotten or ignored except when it is absolutely necessary to remember it—for only so may the individual participate in daily life like others. Dressing and undressing, feeding one's self, eventually cutting one's own meat or as a guest, accepting the least possible help from the person next you—all this implies coöperation of family and friends whose minds leap much more readily to *waiting upon, taking all the initiative for,* and even *talking for* the patient—[so by mistaken kindness imposing passivity and invalidism] than to schooling themselves to allow the newly blind person all the time he needs for experimenting with practical matters upon which personal independence rests. The temptation is to save your own time rather than consider the mental life of the handicapped individual,—to imagine what is significant and what insignificant to him.

As to the way in which they like to be guided from one room to another, on the street, or in the street car, blind people differ. Some like to take an arm and let the guide keep a little ahead; others like to be guided by a touch at the

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elbow from a guide at the left; others like much independence—barely touching elbows and following with a cane or by their own observations the variations in footing—unexpected thresholds and curbstones. Hardly any blind person likes to be guided from behind as we tend to do. He wants you in front of him in going through a door, not behind him.

In going into a new room the seeing person may help the blind man orient himself, by inconspicuous guidance; e.g., placing his hand upon the back or arm of a chair that would suit him, and letting him know indirectly, if possible, who else is in the room. If no one is there he may like to explore it a little for what *you* take in at a glance. I speak in detail because I have seen devoted children so solicitous that they scarcely let their parent (a six-foot giant who lost his sight in a dynamite explosion) touch foot to floor—really making a scene every time he moved. Whatever will make the individual feel most free, least conspicuous, most nearly like a seeing person in all that matters is most nearly right, I am sure.

In reading and writing, clerical service (even if it comes from those nearest and dearest) is best given at regular times with full regard to independent and private action of the blind individual. Not to be able to read your own letters or read over what you yourself have written, not to be able to hear from the newspaper what you choose, these are trials to active minds, met partly by clerical service, partly (for those who learn Braille easily) by the use of Braille. But ordinarily Braille serves best those who have begun finger-reading in youth. In reading aloud it is best not to intersperse your own comments, or interpretations, but to act as an unspoiled medium of transmission. Happiness for the blind, in so far as it depends on others, seems to depend on how far they can trust each friend to transmit "the thing as he sees it" and not to "temper the wind to the shorn lamb" or deceive in matters large or small.

An almost preposterous little thing that often occurs is that even the most civilized people quite often raise their voices in speaking with the blind—as though they were deaf, when, with a newly blind adult sound is becoming hourly more and more significant so that they are fatigued by needless excess of it. It is hard for friends to realize that a newly blind person is not less, but probably more discriminating than ever—sometimes so hard that they speak about the individual in his presence, as though he were deaf, foreign speaking, or a child. So great is our sense of barrier when the give and take of glances is ruled out!

An intellectual blind woman who *minded* being blind more than anyone I have known made the following notes for me for the families of blinded soldiers,—

"Cultivate the faculty of clear and exact description so that the blinded will be able to visualize what you are seeing.

"Instead of minimizing difficulties, more can be gained by saying frankly, 'You will find this at first extremely difficult; you will get terribly tired over your first attempts and you may feel utterly discouraged; but take it from me, everyone goes through this same experience, and if you stick to it, you will be surprised at your own progress.'

"Remember the difficulty of sufficient physical exercise for most blinded men, and urge use of gymnastics (Swedish without apparatus) five minutes at a time many times a day when possible."

From the beginning, it should be recognized, I am sure, that the handicapped individual wishes to have asked of him, all possible things that have usually been asked—just as before. An active blind man once told me with humor what a trial he found it to have a place made for him in the street car—"There is nothing the matter with my legs!" he observed. I try personally never to pass a blind person I know without letting him know that I am passing and telling him any little thing I think he might miss and like to know.

By way of illustration of individual differences in beginning the battle for independence I might add: One man I know who became suddenly blind through accident as a young man, and more than once attempted suicide as a result, says that hearing some verses of Edmund Vance Cook's "How did you die?" was the first thing that made him sit up and take notice. This man was, however, also stimulated by overhearing someone say, "It's a pity he didn't die!" His fighting blood was stirred. A less educated man who was resolved on suicide said that the beginning of his effort came when he took in his hands a fine basket, made by another blind man and said to himself—"I could do that."

If the patient believes that *someone, somehow,* could restore his sight, or some fraction of it, he is usually not ready to receive such help as may come to him through other blind people and their resources. One man puts it—"I had to fall down flat in this respect before anyone could help me up."

When a blind man becomes interested in how other sightless people do or have done—a blind person, in my opinion, gives the most convincing answer. Just having in his acquaintance another person who is living out his life happily and usefully, taking the guidance of touch and sound as matters of course, is reassuring in itself. "Are *you* blind? You speak up just as pert as anybody!" commented a newly blind woman incredulously to a delightful Home Teacher who had not seen since childhood.

It is, however, easier to suggest, as I have done, what may well be considered by the seeing friends of the individual than to say what is

best for your brother. I don't *know* but I *"guess"*,—

1. That it is best to make sure that he has every opportunity to talk over the facts of his condition when he is ready.
2. That it is probably best to remind him that people losing their sight at all periods along the way go on living happy useful lives—sometimes pursuing their own previous interests, sometimes acquiring new interests.
3. That it is best to have something rather immediate to look forward to, like a visit in the East, if he is able.
4. That it is best to begin, as soon as possible, working out with him some *long run* plan, which may lead to a recognized place of usefulness in the economic world, preferably with familiar surroundings and backgrounds.
5. That it is necessary to realize that some find at least a part of their way out through interest in less fortunate blind people. Others need months or years to reconcile themselves to contact with others similarly handicapped but having little else in common.
6. That if your brother's men friends understand, they will help keep him from becoming merely a listener, by taking for granted his participation in discussions and his joining them in walking, driving, concerts, plays, etc.

With *time* and right feeling on all sides, and the bringing in of answers to questions as they arise in the mind of the patient, even *blindness* falls into its place. It may by its very unexpectedness and immediacy compel his attention and interest in a way that offers an unrivaled challenge to his spirit.

Sincerely yours,

LUCY WRIGHT.

INVESTIGATIONS OF PUBLIC HEALTH PROBLEMS

A report has been recently submitted to Congress by Surgeon General H. S. Cumming of the Public Health Service which is of more than routine interest. This report indicates that during the year further study has been made on cancer. The apparent resistance to reinoculation noted in mice inoculated with a strain of mouse sarcoma was made the subject of observation, and it was determined from experiments that this immunity is caused by the growth of the tumor itself and not by the method of treatment. Treatments for cancer as reported by other workers in the field have been carefully followed, and where the results warrant such action, similar experiments have been conducted.

Continuous and intermittent dusting studies for the control of anophelene mosquitoes by the use of Paris green have continued. Screen studies have been continued in western Tennessee and economies have been devised in mosquito-proofing methods. The practicability of county-wide screening has been demonstrated.

The test of the pellagra preventive value of individual foodstuffs as originally planned and initiated by the late Surgeon Joseph Goldberger has been continued. During the course of these investigations, two interesting ramifications of the investigation have been developed: (a) In connection with the study of onions, a severe anemia of dogs was observed. Further studies of this condition are in progress. (b) A fatty degeneration of the liver was observed in connection with the dog experiments.

Studies by the Public Health Service relating to Rocky Mountain spotted fever have included the manufacture and distribution of the vaccine for the prevention of this disease as well as epidemiological studies relating to the occurrence of this infection in man and in nature. Data collected over a period of 16 years indicate a 7-year cycle in prevalence. A quite definite northward and southward extension of the area in which Rocky Mountain spotted fever is endemic has been noted, cases having been reported in Saskatchewan, Canada, and in the State of New Mexico for the first time. Surgeon R. R. Spencer was awarded the Gold Medal by the American Medical Association at the annual session in June, 1930, for original work in the preparation of a vaccine against Rocky Mountain spotted fever.

In the field of Child Hygiene, studies of the effect on the mental health of various types of birth, such as prolonged labor, forceps delivery, and cesarean section, have been made. Studies of the mental hygiene of childhood, to be used as a background for comparison with many studies now available of the so-called "problem child", and studies of the relation of dental caries to nutrition and health were made. The study of the vision of school children in the schools of the District of Columbia has been continued, with special emphasis placed upon the reëxamination of the children.

In addition, a number of studies undertaken outside of the Child Hygiene Office have an intimate bearing on child health problems; for example, the studies on natural illumination, on infectious disease incidence in rural and urban areas, on scarlet fever, and the standardization of biologics relating thereto, on milk sanitation, and other topics.

Industrial Hygiene studies have continued and have yielded valuable information. Ventilation studies have been conducted along two general lines: (1) Studies of natural and artificial ventilation as they relate to air-conditioning, and (2) the study of the practical efficiency of ventilating devices in the removal of dusts, gases and fumes. Measures of natural illumination at the experimental daylight building, although not completed, have been sufficiently worked out so that the results can be applied to buildings in any section of the country for winter or summer and for cloudy and bright days.

The major studies in progress at the close of the year in connection with stream pollution investigations include a resurvey of the pollution and natural purification of the Ohio River between Cincinnati, Ohio, and Louisville, Kentucky. Experimental studies of certain basic factors operative in the process of natural purification of polluted water and studies of the efficiency of artificial water purification processes have also been conducted. The resurvey of the Ohio River is expected to yield information as to the present condition of this section of the river, a comparison of past with present conditions of pollution, the limit of probable future increase in pollution and the rates of natural purification.

The outbreak of psittacosis which occurred during December, 1929, and early in January, 1930, has been studied epidemiologically and laboratory investigations have been in progress since June 16, 1930. During the course of the investigations in the National Institute of Health, there were 11 accidental infections, with one death. To minimize the danger of infection, the laboratory infections of this disease were removed to the United States Quarantine Station at Baltimore, Md.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17101*

SWOLLEN LEGS AND WEAKNESS

MEDICAL DEPARTMENT

PRESENTATION OF CASE

DR. CHARLES A. NOBLE**: This case is that of a fifty year old married male Greek fruit dealer who entered the medical service October 21 complaining of swelling of the legs and weakness of four months' duration.

He was fairly well until a year before that, when he complained of cough and raised some greenish-yellow sputum. There was no chest pain and he did not raise any blood. Four months before admission he had an acute upset from eating some rather spoiled potatoes. To that poisoning he attributed his subsequent illness. He was in bed for two or three days at that time. He strained himself and from this developed an inguinal hernia which kept him in bed for five weeks. Two months before admission he complained of swelling of the legs. He had increasing weakness at that time. There was a noticeable increase in pallor, and nocturia increasing to three or four times at night. There was a good deal of burning. Occasionally the urine was red. He had occasional vomiting after coughing a great deal. He had no loss of appetite. He had lost twenty pounds at the time he was in bed with the hernia repair, but thought he regained it before admission to the hospital.

The past history and family history are negative except for some disease of the right eye following alleged trauma at the age of six or seven. He had a scar on the right cornea.

Clinical examination showed a well nourished, pale man with a square head and prominent bosses. His brother had a similarly shaped head. The bridge of the nose was sunken. All the glands were enlarged, pea-sized to grape-sized, some of them tender and freely movable. The heart was enlarged to the left. A systolic blow was heard all over the precordium. The blood pressure was 120/50 to 90/50. There were râles in the right chest, but no other signs of pleural complication. The abdomen was bronzed throughout, somewhat tense, but no fluid wave was made out at this admission. The flanks were resonant. The spleen was 6 fingerbreadths below the costal margin, firm, tender and smooth. The liver was 2 fingerbreadths down, smooth and quite tender. A vague mass was felt above the umbilicus at that time. There was a good deal of pitting edema from the legs up to the midabdomen. The pupils were irregular, but reacted normally.

On the first admission he had a red blood cell count of 2,000,000, a hemoglobin of 40 per cent, a leukocyte count of 5,000, with a smear showing secondary anemia and a differential count of 81 per cent polymorphonuclears, 8 per cent lymphocytes and 10 per cent of rather atypical lymphocytic cells. The urine was negative except for bile at four of eight examinations. The stools and Hinton were negative. A liver function test showed 15 per cent retention. A quantitative van den Bergh was 3.2. The serum protein was 4.3.

X-rays taken while he was in the ward showed increase in the hilus shadows on both sides.

He was very sick at admission and had a temperature which swung from as high as 103° to 97°, even 96°. Once it was 97° rectally. The pulse was as high as 120. The respirations were unchanged. We felt it advisable to transfuse him at once. A biopsy was done on one of the glands of the neck. We started him on x-ray therapy without waiting for the report on the biopsy. He was given salyrgan. He remained in the wards at this time for about four weeks. For the first two weeks his condition was essentially unchanged. Then he improved definitely and for the last four or five days was sitting up. The edema was down. The temperature was somewhat variable. Even in the last four or five days it was definitely up, but he felt and looked much better. The spleen seemed to have shrunk at the time of his leaving the ward. It was felt 3 fingerbreadths down. He had an intensive course of x-ray treatment lasting six weeks and was then discharged home, having been told to return in four weeks.

Second admission. He returned two weeks later. He had become gradually more dyspneic, weak and edematous. For two days before readmission he was drowsy and chilly. He came in very ill.

Most of the physical findings at the second admission in December were essentially the same as before. There was more marked pallor and more definite jaundice. The blood pressure was 85/40. There was fluid wave in the abdomen and edema of the hands now as well as of the legs, thighs and abdominal wall.

The red cell count was 1,500,000, the leukocyte count 2,000. The differential count was essentially the same as before.

He was transfused again. Shortly thereafter a more marked jaundice was observed. There was some question as to whether that was due to the transfusion. The icteric index was 50 or 60 with a direct van den Bergh of 6.4.

*This case was discussed in Dr. Cabot's Third Year class and also at a conference of the hospital staff. The following report gives the essentials of both discussions.

**Junior interne on the East Medical service.

The urobilinogen in the ward had a concentration of 1 to 200.

During this second admission the temperature was essentially the same as during the first, working up as high as 104° by rectum. The pulse went up as high as 130. The only treatment besides x-ray therapy was iron and ammonium citrate, salyrgan, and codein for his cough.

We continued with the x-ray therapy over the axillae and abdomen, but he did not improve at this time. Punched-out weeping ulcers which did not look like bedsores appeared on the buttock. He became very resistant to any form of therapy, gradually went downhill and died.

Clinical Discussion

BY RICHARD C. CABOT, M.D.,
TRACY B. MALLORY, M.D., AND
GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Cabot: I do not believe that those spoiled potatoes had anything to do with the illness. As you take histories the thing presented to you by the patient in almost half the cases will be a history like this. The patient is sick. The human mind cannot stand an effect without a cause; it must have a cause; and the more ignorant we are the more valiantly we demand a single clear cause for the signs,—the single clear cause that almost never exists. The good old-fashioned traditional cause for illness is something you have eaten. This is a condition established by medical people themselves. The older textbooks lead up to all kinds of diseases with statements about improper diet. I believe you will find, as I have found in these exercises, that looking backward in the light of the autopsy you can generally determine without any reasonable doubt that diet had nothing to do with the case. Diet very seldom has anything to do with any important disease at all, aside from the deficiency diseases. It seldom has much to do with diseases of the stomach. We no longer try to relate gastric ulcer to errors in diet. They certainly are not related to gastric cancer, certainly not to nervous dyspepsia. If errors in diet have nothing to do with gastric disease it is less likely they have anything to do with most other diseases. Of course if a child goes to a Christmas dinner and stuffs itself in a way that indicates a celebration of importance it may get the effects of overeating. But generally one is not called to that sort of case. As regards the diseases that you are going to be treating all your lives, I believe you will come as I have to believe that errors in diet are tremendously overrated as causes. Maybe these spoiled potatoes had something to do with it, but I doubt it.

Strains do cause rupture of course, but next to errors in diet there is nothing I have heard so often falsely reckoned as a cause of sickness as strains of various kinds.

As you remember, he has been developing edema. We do not feel he is any better off for gaining those twenty pounds.

The indications of our history as we begin the physical examination are of disease affecting the urinary tract or the heart or both. The edema of course cannot come from local urinary disease. On the other hand the urgency and burning micturition cannot come from heart disease or any form of nephritis. So it looks as if we had to consider two elements, some general trouble like heart disease or nephritis, and some local disease causing local symptoms. But I am much less certain about the local diseases, because urgency and burning micturition are symptoms for which in many cases we never find the cause, even after death.

NOTES ON THE PHYSICAL EXAMINATION

I suppose from the prominent frontal bones that he may have had rickets when he was a child, but I cannot imagine how that is going to have any bearing on the present case. Congenital syphilis also gives the head something of that shape. But unless we find some lesion in the mouth, nose or eyes we probably shall not think seriously of that.

When we come to the sunken bridge of the nose we do think more of the prominent frontal bones as suggestive of syphilis. That type of nose links itself up with the appearance of the head. Of course one has to remember there are other causes besides syphilis for sinking of the nasal bones. Nevertheless we are right in thinking of syphilis.

There is all the difference in the world between the pea and the grape. Pea-sized glands mean nothing. Half the people in the world have them. Grape-sized,—no. That means pathology of some kind.

The striking thing in the heart examination is the notably low diastolic pressure.

We wonder about this bronzing of the abdomen. Offhand I do not seem to remember seeing this brown color confined to the abdomen except in people who have had x-ray treatment there or who have exposed that particular part of their anatomy to the sun. I am a little puzzled. I wonder if the bronzing was confined to that region.

Dr. Mallory: We do not seem to have noted any difference between the color of the skin there and anywhere else.

Dr. Cabot: I think that is important. I do not want to spend ingenuity on figuring out why he had bronzing of the abdomen if he did not have it.

Dr. Mallory: The skin was very dark all over.

Dr. Cabot: That is a much more comprehensible statement.

There is no good evidence of fluid in the belly. The flanks were resonant, so presumably there

was not free fluid. That is the most definite thing we have had.

Of course the nose and the forehead made them suspect the irregular pupils to be an additional sign of congenital syphilis. But as the pupils reacted normally they do not present any conclusive evidence of syphilis.

The blood shows obvious evidence of a marked secondary anemia.

The retention of 15 per cent after 30 minutes by the liver function test is more than within normal limits. This ought to make us think of some organic liver trouble.

DR. HOLMES: The earlier x-ray examination, October 22, shows an area of calcification, rather constant and well out in the periphery of the lung. I do not believe it has any bearing on his present trouble. It probably represents an area of lung destruction at some time. It may have been tuberculous.

DR. CABOT: Isn't that a very unusual position for such a nodule as that?

DR. HOLMES: Yes, it is not common in that part of the chest. It may be in the pleura.

DR. MALLORY: An absolutely primary focus of tuberculosis is almost always peripheral, just beneath the pleura, but almost never is as large as that. Usually it is only a millimeter or two in diameter.

DR. HOLMES: It is very rarely found in that part of the chest.

DR. MALLORY: Not a primary one.

DR. CABOT: Are you speaking of the infantile type now?

DR. MALLORY: Yes. Such lesions persist as calcified masses throughout life. Of course if one hunts very hard for them they can be found in 80 per cent of individuals.

DR. CABOT: I am learning something today. I have never seen that in an x-ray before.

DR. MALLORY: One is almost never seen in an x-ray.

DR. HOLMES: I still do not think it has anything to do with his present trouble.

He certainly has enlargement of the hilus glands. The later films show quite a definite change in the lung fields since the first examination. There is a distinct process in the upper part of the right lung. The process is that of fine consolidation. It might be due to Hodgkin's disease or to any bronchopneumonic type of infection. The location is rather against tuberculosis in a man of his age. The apex does not seem to be involved. On the left side is an area of calcification well out towards the periphery of the lung, probably representing an infection early in life. The masses at the lung roots are probably enlarged glands, not at all striking.

DR. CABOT: What is the date of that film, Dr. Holmes?

DR. HOLMES: December 20.

DR. CABOT: Ten days before death.

DR. HOLMES: I think from the x-rays alone one would not be justified in saying what that was due to other than a pneumonic process. There is nothing remarkable about the heart. The bones of the pelvis are negative.

DR. CABOT: The X-ray Department so far as I remember is generally ready to give x-ray treatment if they think the patient has Hodgkin's disease, but not particularly so if he has not. They know that Hodgkin's masses may disappear wonderfully under x-ray. Patients do get much benefit from it. There is a sharp line between that and other neoplasms.

DR. HOLMES: That is generally so. But it is true that in certain stages of Hodgkin's disease one hesitates to start treatment,—if it is very rapid and very far advanced.

DR. CABOT: I should be interested if we had any red cell count about November 28. If he improved very much we should expect his red count to go up.

MISS PAINTER: The last red count was on November 9 and was 2,300,000. It had been 2,900,000 on the fourth.

DR. CABOT: According to that the count was going down, not up.

MISS PAINTER: It swung up and down. Every other count is high.

DR. CABOT: The leukocyte count showed a remarkable leukopenia from the very beginning, strikingly so now.

He was chilly. One wonders therefore if he has not got an infection on top of what he had before.

There is a little something there in the x-ray in the right lower back, rather more in the higher parts, isn't there?

DR. HOLMES: Yes.

DR. CABOT: The blood pressure is notably low at the second admission.

DIFFERENTIAL DIAGNOSIS

I think that is symptomatically a very interesting case. There are many possibilities we have to consider. Let us start with that which came to my mind in the beginning when we heard he had edema. Can the man have died of heart trouble? I should say certainly not. He may have had some heart trouble, but although we have a blowing systolic murmur and some evidence of heart enlargement, I am confident it was not an important element in the case. But still syphilis, the next diagnosis we have to consider, can account for that without supposing any heart disease. The heart either is not in the picture at all as cause of death or is very slightly so.

We have the same thing to say about the kidneys. There is no good evidence of kidney disease.

Next we come to the question of pigmentation of the skin, which Dr. Mallory says was general and well marked. Especially at this time of the year when he cannot well have been out-of-doors this should strongly demand our atten-

tion and make us think of Addison's disease, ordinarily tuberculosis of the suprarenal capsules, causing pigmentation of the skin. Is there anything else that suggests Addison's disease? There was a notably low blood pressure on more than one occasion. But one does not find here the gastric or cardiac symptoms often going with Addison's disease. We do not know if there was pigmentation inside the mouth. Many of the known Addisonian cases have pigmentation of the mouth. We always look for that, and should have looked for it here. Addison's disease cannot be ruled out here, though there certainly has to be something else. Addison's disease usually does not cause such anemia. There is sometimes a little confusion in our minds there, for the same great man who discovered Addison's disease also discovered pernicious anemia. But true Addison's disease of the suprarenal capsules sometimes produces no anemia at all and sometimes moderate anemia. I should not expect it to produce so marked an anemia as is shown here. It seems to me that the Addisonian syndrome cannot be ruled out. But it is not enough. If it is in the picture it must be only part of the picture.

Is this case one of tuberculosis? I think of that first because tuberculosis is the commonest cause of destruction of the adrenals in Addison's disease. What evidence of tuberculosis is there elsewhere? We have some glands, but they are not at all characteristic of tuberculous glands unless some of them break down. We have no evidence that any such thing occurred. He is not at an age when tuberculous glands are common. That is a feature of children's tuberculosis, and although it does last on into later life, it does not often last until fifty years or first appear at this time. Can the lung lesions here be tuberculous? I do not believe anybody could possibly say no. Aside from the question we have already discussed about this obsolete nodule at the periphery, they do not suggest it to me. True, at the right side there seems to be more at the top than elsewhere.

DR. HOLMES: Yes.

DR. CABOT: You would not say from looking at those films that there was anything characteristic of tuberculosis?

DR. HOLMES: I doubt if you could exclude it. It would be a very atypical one.

DR. CABOT: There is no sign of cavity or of a rapid miliary process. Tuberculosis seldom causes so marked an anemia, and I do not believe it could have caused the enlargement of the glands and spleen, which has been noticeable. All those are difficult to explain under a diagnosis of tuberculosis. On the whole I do not believe it is tuberculosis unless the adrenal was a factor in this case.

Is it syphilis? The nose, the shape of the head, certainly suggest congenital syphilis, although that is a pretty rare thing to be sure of at fifty. The older a person is the less certain one feels of any diagnosis of congenital syphilis. Those ulcers seen upon his buttock do not sound to me like syphilitic gummata, though the record explains that they did not look like what you would first think of, bedsores. I do not know what they are. The blood reactions of course are against any present syphilis. While he may perfectly well have had congenital syphilis, I do not see that we can say syphilis was an important element in the cause of his death. Could he have had syphilis of the liver? It is possible, but we have nothing characteristic of it. Syphilis often goes with enlarged spleen, especially in infancy and childhood, and of course it could account for some of the enlarged glands. My chief difficulty is the fact that he died, and that people very seldom die of syphilis in these days unless it is in the form of syphilitic aortitis or a brain process, neither of which can be considered here at all. On the whole I feel that we can rule out syphilis.

Some sort of neoplasm certainly has to be considered. Neoplasm might perfectly well among its other metastases involve the suprarenal capsules and account for the pigmentation and the low blood pressure. It might, Dr. Holmes says, account for what we see in the lungs. It might be responsible for some of those glands. It might certainly be the cause of the abdominal mass, although malignant disease of the spleen is not at all common as a cause of such enlargement as this. If neoplasm got into the bone marrow it might account for the low leukocyte count and red count. I do not see how we can rule it out. My chief difficulty about malignant disease is that I cannot make a guess as to where it started. It may conceivably have started in the kidney. He had some local kidney symptoms in the beginning, but not the sort of symptoms we expect in neoplasm. Renal neoplasm shows itself by hemorrhage and by a different sort of tumor from any suggested here. At the same time we know perfectly well that renal neoplasm can be wholly latent, undiagnosable without a pyelogram. I have great difficulty, then, in saying where it started (in case it was malignant disease), unless it was of the form we call Hodgkin's or malignant lymphoma. I do not know how to rule out Hodgkin's. I do not know that we can hit on any better diagnosis, though Hodgkin's has no characteristic blood that could account for his anemia. It could account for the glands that have been felt and seen, for the enlargement of the spleen and liver and of the other abdominal glands and for the edema. I do not see anything it could not account for. I will come back to it after going through a few other possibilities.

What else do we know that could produce this enlargement of the spleen? We must never forget cirrhosis of the liver, which I have forgotten several times when I was sorry for it. Why shouldn't this man have cirrhosis of the liver? That would account for the liver, the spleen, the

abdomen and the legs. Pigmentation, if he had it, seems to me to be distinctly against cirrhosis. It would go better with Hodgkin's or Addison's. His death, if he had cirrhosis, would be accounted for not by the liver itself but by the bronchopneumonia which we probably have to suppose whatever he had.

He comes from a part of the world in which the so-called Banti's disease is most often mentioned. As Dr. Wolbach said last week, Banti's disease is getting to be a more and more shadowy diagnosis and a more and more disappointing clinical picture. I do not like to make the diagnosis as a rule unless there is evidence that the trouble started with anemia, splenic enlargement and then later cirrhotic liver, and that is very difficult evidence to produce. The evidence of diminished liver function would go perfectly well with cirrhosis or of course with malignant disease or Hodgkin's of the liver or with some obstruction outside the liver blocking the ducts.

He obviously has not got the hemolytic type of jaundice connected with the spleen, the congenital hemolytic jaundice. In the first place he is too old. He has not had a history of it since birth. There are no characteristic changes in the blood. It is certainly not leukemia and certainly not any form of primary anemia.

I think I have been through all the things one ought to consider and a good deal more than one ought to consider seriously. It seems to me it comes down to the question between cirrhosis and Hodgkin's disease. On the whole Hodgkin's disease satisfies the picture better, because cirrhosis cannot easily account for the glands in the various parts of the body. I do not happen to remember a case in which Hodgkin's disease or malignant lymphoma involved the suprarenal capsules. I think a diagnosis of neoplasm, very probably Hodgkin's disease, possibly involvement of the suprarenal capsules and a terminal bronchopneumonia is about as good a diagnosis as I can make.

With a diagnosis of neoplasm the thing that bothers me is the spleen. That, of course, if it is Hodgkin's or lymphoma, would not be strange at all. If any other form of malignant disease it would be strange.

A STUDENT: Could the large spleen be the result of malaria?

DR. CABOT: It might. Have we any evidence as to how long he has been in this country? This sort of spleen is common in people living in malarial countries, people who have had a number of attacks of malaria without treatment. But in this country at this time, I should say it is improbable, because we see so very few malarial spleens.

MISS PAINTER: He had been in Greece until six years before he came to the hospital, and in Massachusetts in the meanwhile.

DR. CABOT: People with spleens as big as that are not usually vigorous or likely to come so far. It goes with a pretty cachectic state. I am against malarial spleen.

A STUDENT: How about the possibility of aleukemic leukemia presenting a picture like this?

DR. CABOT: I do not see that it can be ruled out, because I do not see that it is really different from the diagnosis I have made. I like to put things in positive rather than negative terms. When we find lymphoma or malignant lymphoma we may or may not have with it the blood metastasis which we call leukemia. This might be such a disease without that blood metastasis. The white cell count is not in any way suggestive of it, but there is not any particular white cell count that we must have under those conditions. I shall be a little surprised if the large number of marrow cells, that is of polynuclears, could go with an "aleukemic leukemia". I think that is rather a good point but not a decisive one against there being any extensive marrow metastasis.

A STUDENT: Does the white cell count rule out subacute bacterial endocarditis?

DR. CABOT: No, the white cell count does not rule it out. With that disease we can have any kind of white cell count, generally normal or elevated. The things against it are the lack of fever and the lack of evidences of embolism. I do not believe anybody could make that diagnosis on the basis of the evidence you and I have.

A STUDENT: Would Hodgkin's disease account for the dark red-brown urine?

DR. CABOT: It is perfectly compatible with it, because almost any citizen might have that. That is not characteristic of anything; it is compatible with almost anything. It merely means there is urinary concentration at that time. The causes of dark urine are as many as the causes of constipation.

A STUDENT: How do you explain the intense thirst and nocturia?

DR. CABOT: I do not believe I can. I think I must simply say I do not know. That does not surprise me. I think in almost any case one finds one or two symptoms that one cannot account for.

A STUDENT: Could you have a chronic malaria without a febrile course?

DR. CABOT: No. It is perfectly safe to say this man did not die of malaria. They looked at the blood and I do not believe they could have missed it there. When people die of malaria the organisms ought to be found. I think that can be ruled out.

X-RAY INTERPRETATION OCTOBER 23

The findings might be due to Hodgkin's disease or to tuberculosis.

PATHOLOGIC REPORT (BIOPSY)

Glands removed from the neck October 24 show lymphoblastoma, Hodgkin's type.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lymphoblastoma.

DR. RICHARD C. CABOT'S DIAGNOSES

Neoplasm, very probably Hodgkin's disease.
Possibly involvement of the suprarenal capsules.
Terminal bronchopneumonia.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Lymphoblastoma, Hodgkin's type.

2. *Secondary or terminal lesions.*

Slight bronchopneumonia.
Slight endocarditis.

3. *Historical landmark.*

Meckel's diverticulum.

PATHOLOGIC DISCUSSION

DR. MALLORY: This man died of perfectly typical Hodgkin's disease, with marked sclerosis and fibrosis of the glands, multinucleated giant cells, the so-called Sternberg cells, and occasional eosinophiles. The distribution of lesions was typical. The peripheral glands were somewhat diffusely enlarged, the bronchial glands were big and the retroperitoneal glands still more so. The liver and spleen were both involved very extensively. Both were very much enlarged, the spleen more notably, and both showed the characteristic porphyry appearance resulting from diffusely infiltrating cords and masses of tumor tissue.

There was a very slight degree of bronchopneumonia and a slight endocarditis, evidently quite recent. I do not think they were of any great significance.

We do not feel sure that we know the cause of his jaundice. There were a number of quite large glands immediately around the common bile duct and it seemed possible that pressure from them might have occluded it. The intrahepatic lesions may equally well have been the cause. No cause whatever for the edema was found.

A purely incidental finding was a Meckel's diverticulum.

DR. WYMAN RICHARDSON: I saw this man in August, two months before he came into the hospital. The picture at that time was essentially the same. The only confusing feature was the massive edema of the extremities and a history of nocturia with the passing of small amounts of high colored urine. That feature was so prominent that the question was brought up whether there was nephritis. However, his blood findings, which were essentially the same as they were in the hospital, and the enlargement of the spleen, liver and glands made the diagnosis of Hodgkin's disease probable at that time. I do not see that the edema and nocturia have been very well accounted for yet. I wonder whether they are related to liver damage of the same sort that is seen in cirrhosis of the liver. I have wondered why people with cirrhosis of the liver have edema and why they have apparent renal difficulty which seems in many cases to be somewhat relieved by the use of salyrgan. I believe that this drug is supposed to act on the kidneys. In the blood smear there were present cells which I took to be of the large mononuclear series. These were definitely abnormal and apparently rather immature, if you take the presence of nucleoli to be evidence of maturity. These I imagine were the same cells which were seen in the hospital. I do not feel that I, at any rate, can diagnose Hodgkin's disease from the smear, but I feel that the presence of these cells is of importance.

DR. ARLIE V. BOCK: I should put much more stress on the general formula in the presence of these cells. I cannot say anything about Hodgkin's disease from the blood in the usual case, but if the polynuclear count is 80 to 90 per cent regardless of the other cells, with normal or increased platelets, Hodgkin's disease is a thing to be thought of before anything else. In the absence of sepsis I should have thought that was a good lead in the diagnosis.

A second point is the edema. Two things occurred to me about the edema. We find quite severe grades of edema in certain cases of anemia accompanied by a low serum protein. In this patient the serum protein was 4.3 per cent, a value at which we would expect edema to occur. Edema might be associated with involvement of the lymphatics.

DR. CHESTER M. JONES: When this man came to the service I thought his edema was due entirely to that low serum protein. Involvement of his liver by lymphoma might be regarded as an additional cause, but an explanation of edema as due to liver disease is at times very difficult to maintain. We probably must look to some other mechanism.

DR. MALLORY: The real evidence of liver involvement came pretty late in the disease.

DR. RICHARDSON: At the time I first saw the patient the polynuclear per cent was 68, the lymphocytes 19 per cent, and the total leukocyte count 6,000.

DR. MALLORY: We could not find a mechanical cause for the edema at all. He did have enlargement of the peritoneal nodes around the vena cava, but there was no suggestion of any narrowing of the vessel. We noted also that the small intestine was quite markedly edematous, a condition which caval obstruction would not explain. If we had not had the biopsy before radiation was begun I think I should have been inclined at autopsy to attribute the marked sclerosis of the tumor lesions to x-ray therapy.

But the biopsy proves that it was present before radiation was begun.

DR. HOLMES: Is there any explanation for fever in Hodgkin's disease? Why do some patients have temperature and some none?

DR. MALLORY: I have never heard of any explanation. This case had the typical Pel-Ebstein syndrome, with rather higher temperature than the average case.

What grade of anemia did he have in August, Dr. Richardson?

DR. RICHARDSON: 2,450,000 red cells, hemoglobin 40 per cent (Tallqvist), leukocyte count 6,000.

DR. MALLORY: I remember seeing quite marked edema in pernicious anemia. Usually, however, the red cell count was down to 1,000,000 or lower before it developed.

DR. NOBLE: The red count was constantly low at the second admission, 2,000,000 or lower.

DR. RICHARDSON: It is very striking that edema is so much more prominent in pernicious anemia than in secondary anemia at the same level.

A PHYSICIAN: Was there nothing in this patient's heart?

DR. MALLORY: No, except for traces of old endocarditis which produced no valvular deformity.

DR. CABOT: Did you see anything of that nodule Dr. Holmes said was calcified in the lung?

DR. MALLORY: There was an area of healed tuberculosis, at the present time completely calcified.

DR. CABOT: Was there nothing in the urinary tract?

DR. MALLORY: Nothing whatever.

A STUDENT: How about the suprarenals?

DR. MALLORY: They were entirely normal.

DR. CABOT: Pigmentation comes then as part of Hodgkin's disease.

DR. MALLORY: I am not sure it was anything more than racial. He was pretty dark, but I think I have seen Greeks as dark as that.

DR. CABOT: One does get marked pigmentation in Hodgkin's disease, though. Is that your experience?

DR. HOLMES: I think that is so, though I should not think of it as a cause of generalized pigmentation.

DR. CABOT: Of course you help out a little on that, don't you, by treatment?

DR. HOLMES: That again would not be general.

DR. MALLORY: Have you seen any of these cases show as much edema as this, Dr. Holmes?

DR. HOLMES: No.

DR. CABOT: Weren't there enough glands in the abdomen to account for it?

DR. MALLORY: They were large, but they did not seem to press on the vena cava surface.

A STUDENT: Would not a low serum protein explain the edema perfectly well?

DR. MALLORY: Yes, perfectly well; but why should he have a low serum protein?

DR. CABOT: In fact, even after Dr. Mallory has given us the findings we cannot explain everything. This case will I hope help to get the minds of the students accustomed to the fact that in every diagnosis one has to disregard some points. The only question is which to disregard. The wise plan is to explain as many as you can and take your luck with the rest.

CASE 17102

PAIN IN THE RIGHT CHEST

MEDICAL DEPARTMENT

An English iron worker forty-nine years old was brought to the Emergency Ward October 29 *in extremis*. The history was given by his daughter.

Seven days before admission he had onset of pain in his right chest in front. With this there was cough which aggravated the pain. There was some sputum. He stayed in bed, but did not see a physician until the day before admission.

Clinical examination showed a well nourished man, irrational, very cyanotic, pale and sweating, propped up in bed breathing noisily with gurgling and gasping respiration. The teeth were decayed and ill-kept. The chest showed diminished expansion on the right. In the right front from the second to the fifth ribs there was dullness with tubular breathing and coarse to medium sticky râles. At the right apex posteriorly there was dullness with distant bronchial breathing and râles. Both backs from the spines of the scapulae down were resonant and full of large coarse bubbling râles. The heart sounds were not heard because of the noise in the chest. Percussion showed no enlargement to the left. The right border of dullness and the supracardiac dullness were not made out. The pulses were equal and weak. The blood pressure was not obtainable. The abdomen was negative. The fingers and hands were very cyanotic. The knee jerks and ankle jerks were not obtained. The right pupil was larger than the left. Both were irregular. Neither reacted to light.

The temperature was 103°, the pulse 142. The respirations were 46.

In less than an hour after admission to the hospital the patient died.

CLINICAL DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

A history starting as this does is unsatisfactory and leads us often into diagnostic blunders. We depend very much on a good history, and do not often get it under these conditions of desperate illness.

I should like very much to know whether that sputum looked rusty or orange-juice colored, the two quite different colors that one may see in pneumonic sputa.

NOTES ON THE PHYSICAL EXAMINATION

It is natural that the percussion borders could not be made out with such a condition as there was in the lungs.

Absence of knee and ankle jerks is what one expects in pneumonia. It does not point to any other disease.

In a man so near death I do not think the fact that the pupils did not react has any relation to syphilis.

DIFFERENTIAL DIAGNOSIS

The only question is, need we consider anything else than what it obviously seems to be, an acute lobar pneumonia? Could it be tuberculosis? In one of the early editions of Osler's *Practice* he tells in his wonderfully truthful way how he demonstrated a case of pneumonia to a class one week and the next week had to demonstrate it as tuberculosis. We haven't a good history here. We have no evidence in the sputum. It seems to me they ought to have given us more evidence if there was any, and supposing that the man was strong enough to produce sputum. It would help us if we had that knowledge. The shortness of the history of course is against tuberculosis, but does not rule it out. Miliary tuberculosis ought to be remembered as a possibility, though not at all, I think, as a probability.

Coming back to the question of knee jerks and pupils, those knee jerks and pupils are consistent with posterior spinal sclerosis, tabes. In the absence, however, of any other evidence of syphilis, I think we should be unwise in interpreting those as syphilis. We know that pneumonia destroys the knee jerks and ankle jerks. We know that almost any condition of the pupils can exist in moribund patients. It seems to me that it would be more sensible to say that is just part of the infection of which he died.

Should we consider malignant disease of the lung? That is always a good thing to think of because we make so many errors of omission in relation to that disease. But I never heard of a case with such a history. There is always a longer history.

What should be found in the heart? Nothing abnormal, I should say, on the evidence that we have here. There is no reason to accuse it. Many cases of pneumonia coming on like this show some pleural exudate, not only plastic exudate over the lesion but fluid. It is perfectly possible that he had some fluid, though there is not quite enough evidence to prove it.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Acute lobar pneumonia.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Lobar pneumonia, right lung.

2. *Secondary or terminal lesions.*

Atelectasis, lower lobe of left lung.
Emphysema, upper lobe of left lung.
Arteriosclerosis.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: We found a very extensive lobar pneumonia involving the entire right lung. It was possibly a little older in the right upper lobe than in the right lower, although it was difficult to see much difference between the two. The heart was somewhat displaced to the left side by the enlarged lung, and the lower lobe on the opposite side was completely atelectatic. The upper lobe on the other side was emphysematous, the only lobe in which there was any apparent respiratory function at all. There was slight generalized arteriosclerosis. The heart was entirely normal. Nothing else of significance was found.

A STUDENT: Which type of pneumonia was it?

DR. MALLORY: We did not get a culture.

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THE GRADING OF MALIGNANT TUMORS

RENEWED impetus has been given to interest in the so-called grading of carcinomas by the observations of Ewing[1] and others that a very fair estimate of the way in which a given tumor will react to radiation can be made from its histological appearance. This is particularly true in the group of epidermoid carcinomas. Fortunately the group of epidermoid carcinomas, for which both the grading and the determination of radiosensitivity are most accurate, is among the most common of tumors.

While estimation of the relative malignancy of tumors has long been known, and correlation between the histological appearance of a given tumor and its probable malignancy was attempted even by Virchow, the studies of Martzloff[2] and of Broders[3] first drew the attention of surgeons, as well as pathologists, to this phase of tumor diagnosis.

If the pathologist is to be of great help to the surgeon in classifying tumors as to their degree of malignancy and estimating their radio-sensitivity, it cannot be too often emphasized that while the pathologist should make the best and most accurate diagnosis possible on the tissue at his disposal, he must also be provided with adequate clinical information concerning the patient.

Suppose, for example, that the pathologist has a specimen of an epidermoid carcinoma removed from the tongue. Histologically it appears to be of moderate malignancy, and consequently falls in Grade II. This, however, is not enough. The pathologist must know from where on the tongue the specimen came, in order to tell accurately, or rather as accurately as the method will allow him, the degree of sensitiveness of such a tumor to radiation. For example, a Grade II epidermoid carcinoma from the anterior portion of the tongue is relatively resistant to radiation. A tumor similar in histological appearance from the base of the tongue, however, is sensitive to radiation. Another example; if the pathologist receives a portion of growth from the skin, a typical rodent ulcer let us say, or basal cell carcinoma under pathological terminology, it makes a decided difference in the response of the tumor to radiation whether it comes from a region where there is underlying connective tissue and muscle, as the cheek, or whether it comes from a region where the tumor is in close contact with bone, as the forehead. Most basal cell carcinomas do extremely well with radiation so long as they have a favorable substratum for reaction to irradiation, that is, muscle or connective tissue, but those invading bone or cartilage respond but poorly. It is important to keep in mind that the mere location of a carcinoma has a great deal to do with its satisfactory response to radiation, and that if the opinion of the pathologist is to be of full value in any given case, he must be conversant with at least the major clinical features.

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THE DIRECTORSHIP OF SCHOOL HYGIENE IN BOSTON

IN our issue of October 2, 1930 we paid tribute to the late Director of the Department of School Hygiene of Boston, Dr. John A. Ceconi. By his death the citizens of Boston lost a public servant who was both devoted and wise. Such men are difficult to replace in any calling. Of course, a job can easily be disposed of, but the real question is, can the City secure the services of a man who will bring to the work the enthusiasm, the integrity, the wisdom and the *practical experience as a public health official* which were among the qualifications of Dr. Ceconi?

It is of vital concern, not only to parents, but also to all who have at heart the welfare of Boston, that the rising generation should enjoy good

health. Upon the shoulders of the Director of the Department of School Hygiene rests a great responsibility for the health of Boston's future citizens. Upon the School Committee, the Commissioner of Civil Service, and His Honor the Mayor rests the duty of selecting and of appointing to the office of Director of the Department of School Hygiene the best qualified available candidate.

We believe that a well qualified successor to Dr. Ceconi can be found in Boston and we hope that official action will not be long delayed.

AID FOR PHYSICIANS IN THE DROUGHT AREA

ANNOUNCEMENT has been made that The Board of Trustees of the American Medical Association has taken steps to relieve the needs of doctors in the stricken area.

The Secretary, Dr. Olin West, has been directed to investigate the conditions as they apply to the physicians.

This movement will be endorsed by the medical profession throughout the country.

Dr. Garrison of the Arkansas State Board of Health reports that Arkansas doctors have given the "limit" of their time, money, and medical resources to drought sufferers.

A previous report indicated that the Red Cross will not provide medical service for the sick in the drought area. This decision seems to be illogical. The people need medical service and doctors are as much entitled to remuneration as any other persons employed to relieve suffering.

ADVICE RESPECTING IMMUNIZATION

THE United States Public Health Service has issued a bulletin recommending diphtheria immunization early in life by the use of diphtheria toxoid to be followed by Schick tests to determine whether repeated applications of the toxoid are required.

Toxoid is regarded as more efficacious than toxin-antitoxin and should displace the latter.

Health authorities are trying to impress upon the people that diphtheria is an entirely preventable disease but that this cannot be brought about until immunization is so general that the carrier is no menace.

Smallpox is equally preventable.

Several other communicable diseases, scarlet fever, measles and typhoid fever can also be controlled in a similar manner but none of these calls for the general use of immunizing treatment except under special conditions.

For example, typhoid fever is now so well controlled in most communities that it is unnecessary for everyone to take typhoid vaccine unless one expects to travel in places where sanitation is not ideal.

With scarlet fever, the greater mildness of the disease at present seems to warrant the belief that wholesale immunization is not necessary and as for measles, immunization is only advised when one child in a family falls ill with the disease and other susceptible children are liable to be victims or in institutions caring for large numbers of young people.

However, in any severe and virulent epidemics the conditions may warrant an aggressive attitude.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

VIETS, HENRY R. B.Sc., M.D. Harvard University Medical School 1916. Instructor in Neurology, Harvard Medical School. Neurologist, Massachusetts General Hospital. Address: 6 Commonwealth Avenue, Boston. Associated with him is:

WARREN, SHIELDS. A.B., M.D. Harvard University Medical School 1923. Pathologist, New England Deaconess Hospital, New England Baptist Hospital, Collis P. Huntington Memorial Hospital, Robert B. Brigham Hospital, House of the Good Samaritan. Instructor in Pathology, Harvard Medical School. Address: 195 Pilgrim Road, Boston. Their subject is: "Vaccinial Encephalitis. A Report of Three Cases, Two with Postmortem Examination." Page 475.

CROTHERS, BRONSON. A.B., M.D. Harvard University Medical School 1910. Assistant Professor of Pediatrics, Harvard Medical School. Neurologist to Children's and Infants' Hospital, Boston. His subject is: "Mental-Hygiene Problems of Children with Sensory-Motor Defects." Page 481. Address: Children's Hospital, Boston.

TOWLE, HARVEY P. A.B., M.D. Harvard University Medical School 1892. Consulting Dermatologist to Massachusetts General Hospital, Robert Bent Brigham Hospital, State Infirmary, etc. His subject is: "The Present Status of Gold Therapy." Page 487. Address: 453 Marlborough Street, Boston.

PHANEUF, LOUIS E. Phm.D., Ph.C., M.D. Tufts College Medical School 1913. F.A.C.S. Professor of Gynecology, Tufts College Medical School. Chief of Service, Gynecological and Obstetrical Department, Carney Hospital. His subject is: "Lacerations of the Perineum in Female Children." Page 489. Address: 270 Commonwealth Avenue, Boston.

COTTON, F. J. A.B., A.M., M.D. Harvard University Medical School 1894. F.A.C.S. Surgical Chief, Boston City Hospital. His subject is: "Fracture Treatment: Convalescence and Apparatus." Page 491. Address: 520 Commonwealth Avenue, Boston.

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DAY, HILBERT F. Ph.B., M.D. Harvard University Medical School 1905. F.A.C.S. Faculty Instructor in Surgery, Harvard Medical School. Professor of Clinical Surgery, Tufts College Medical School. His subject is: "Sudden Blindness at Fifty." Page 503. Address: 412 Beacon Street, Boston.

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LOUIS PASTEUR

1822-1895

WHEN one thinks of the part infections play in the causation of the diseases with which the medical profession has to deal and further considers the problems of the natural and artificial production of immunity in such conditions, the name of Louis Pasteur is among the first that comes to mind. It is impossible to say, when, if ever, a practitioner of medicine who might have stumbled upon some of the important phenomena of infection and immunity, could have been found who would have had the requisite training in chemistry and physics to have grasped their significance. Indeed we might still be groping for a key to admit us to the mysteries that Pasteur's dogged persistence, prevision and masterful technique opened up for us. In his career we have also an example of the influence of a parent who, though a poor peasant, a tanner by trade, unquestionably imparted to his son one of the determining impulses of his entire career, viz., his patriotism. The father was a private in the Napoleonic wars and was intensely patriotic and devoted to his Emperor. He held before his son the ideals of service to the flag and bred in him a desire to serve the State, in any way, to the extent of his abilities. Both father and mother were industrious, honest and the father, at any rate, was intellectually ambitious for Louis, who was an only son. The artistic strain that manifested itself in him was derived from his mother who was a person of active intellect and vivid imagination. Her household duties kept her from having as much to do with her son's intellectual upbringing as did his father, who was his companion and adviser to a somewhat unusual degree. There was nothing about his behavior in the early days of his schooling that marked him as unusual. He was slow, accurate, painstaking, thoroughly honest and trustworthy in everything he undertook. It was during this early period of his life that he displayed his liking for sketching and portraiture. It is interesting to note that the first scientific interest he had was in crystallography and it seems not unlikely that his artistic training in accuracy of observation may have had a good deal to do with giving him an interest in studying the forms of crystals. At 18 he entered Besancon's College, Royal where he remained three years but he did not here acquire any special interest in science but because of his devotion to literature and art was regarded by his teachers as destined for an artistic career. His letters to his father at this period reveal the character of the youth and his determination to succeed in his ambition to fit himself for a position in which he would be able to win distinction as a scholar. It was his ambition to qualify for the Ecole Normale, a school designed to afford properly qualified students an opportunity to prepare for teaching positions. Homesickness had defeated his first attempt to gain admission to this institution and he went back to Arbois and later to the College at Besancon. In 1842 he was qualified to take the Normale examinations but as he was number 15 among the 23 qualified, he was not satisfied with that grade, and decided to try again the next year. He went up to Paris a second time, spending his time at the Lyceé St. Louis, the libraries and most important of all, attending Dumas' lectures on chemistry at the Sorbonne. He was tutoring to assist in meeting his tuition fees and won several scholastic honors which were of some pecuniary assistance as well. In 1843 he tried the Ecole Normale tests a second time receiving the rank of fourth. This was satisfactory to him and he matriculated. It was at this time that his interest in crystallography was aroused and curiously enough, in view of the subsequent course of many of Pasteur's researches the circumstance that stirred this interest was a matter concerned with industrial chemistry, the production of certain acids in connection with fermentation in wine casks. So it came about that his first piece of scientific investigation concerned itself with the forms of crystallization in tartaric and para-tartaric acids and the behavior of these crystals toward polarized light. This discovery was an epoch-making one in physical chemistry and brought the young investigator immediately into prominence. He had then been less than two years in the Ecole Normale. Happy as he had a right to be over his success, it resulted in his being temporarily dissociated from Paris for he was called as Professor to Strassburg where he worked for some years and it was here also that he found his wife. In 1853, in recognition of the value of his work upon crystallization, molecular dissymmetry and polarized light he was awarded the ribbon of the Legion of Honor. In this work upon the tartrates he became impressed with the fact that the addition of fermenting organic

material to solutions of the crystals of organic salts would convert such salts as were inert to polariscopic examination to those that were active. His deduction from these facts was that some bacterial ferments were responsible for these phenomena. Fortune again seemed to favor him, in that just as he was beginning to think along these lines he was called to Lille, the center of a beer manufacturing district, to become the Professor of Chemistry at the University. Here he had unusual opportunity to study various kinds of fermentation. This was in 1854. Starting with alcoholic fermentation he proceeded to show that different fermentations were activated by different organisms, for example, butyric and lactic acid bacilli. In establishing these observations he was obliged to combat the authority of such recognized leaders as Leibig, and Gay-Lussac, Pouchet and Bastian. His final triumph over them was achieved in 1862 at which time he was honored by election to the Academy of Sciences. He next turned his attention to vinegar and showed there was an acetic acid fermentation, analogous to those of lactic and butyric acids. This was of practical value to the manufacturers of vinegar. It was during these investigations that he established the anaerobic character of certain organisms. In the manufacture of wines he was able to aid the industry by the discovery that certain "diseases" of grapes which cause the wine at times to become sour, bitter or muddy, were caused by specific ferments of organic origin and that to prevent their occurrence it was only necessary to "pasteurize" the wine. As may be seen from the foregoing description of his activities he was putting to practical use the results of his researches but it was not until 1865 that he had opportunity to make a striking demonstration on a large scale of the value of scientific investigation. In this year his aid was asked in solving the problems of the silkworm raisers of northern France, where there was such a mortality among silkworms that not only was the silk manufacturing industry threatened with extinction, but famine menaced a large district devoted to silkworm culture. He demonstrated that there were two organisms responsible for two distinct diseases in the silkworm and pointed out how they could be recognized and also that, by selection of uncontaminated silkworm eggs, the diseases could be avoided. There were other important discoveries made as by-products of these studies, that became ultimately of great importance in human pathology and in his own future work on immunity. Two volumes covering these investigations were published in 1870. In 1868 he was critically ill and his life was despaired of. After his recovery and after the effects of the Franco-Prussian War had worn off, and the latter had embittered Pasteur most strongly against Germany, he made some studies on the manufacture of beer with a view to aiding French brewers in competition with their German rivals. These were not so strikingly successful as some of his previous work. The Franco-Prussian War saddened him and aroused the most hostile feelings toward the German race. In fact an honorary degree conferred upon him by the University of Bonn, a year or so before the war, and signed by Emperor William, so disturbed him that he returned it with some caustic remarks. He was held in the most profound respect by his students in whom he was always intensely interested. He was constantly fighting to secure for France the distinction of preëminent scientific prestige and bemoaned, what he believed to be a fact, that lack of national pride in this respect had left his country a prey to Germany. His studies upon anthrax and the bacillus of malignant oedema were interesting and in the case of the former at least, were worth while, for France had industries that made the presence of anthrax epidemics a serious matter financially.

About this time (1877) Pasteur in his anxiety to make every practical application of his researches possible, visited certain of the Paris hospitals to observe the sick. The liberal-minded physicians welcomed him but there were many who looked askance upon his work and opposed his teachings. However he demonstrated from a study of the bacteriology of furuncles and osteomyelitis that the same organism occurs in each, an observation which we accept readily enough now but one that created a good deal of a sensation when Pasteur proclaimed it. At about the same time he detected the streptococcus in cases of child-bed fever within the cavity of the uterus and in the blood of the living patient. To one who is conducting researches in any sort of a laboratory there are so many inexplicable occurrences in the course of the investigations, many of which are forgotten by the interested investigator, that one marvels at the number of these that did not escape Pasteur, for he was all the time recalling some one or other of these discards and turning them to practical use. One of these prompted him to make a start upon his work on immunity, which is perhaps his most important contribution to medicine. The outcome of these studies was that he was able to employ protective inoculation against chicken cholera and anthrax. The crowning success of Pasteur's life was to come as his final contribution to scientific investigation, in the extension of his methods of immunization to the dread disease, Rabies.

Dramatic as were the results of many of the experiments which he carried out in attempts to solve the problems presented by "disease" in wine, micro-infections in silkworm culture, in the etiology of anthrax, chicken and hog cholera, it was far more so when he succeeded in saving the life of the little Alsatian boy, Joseph Meister, who was brought to Paris suffering from 14 wounds inflicted by a rabid dog. It has fallen to the lot of few, if any other than Pas-

teur, to contribute so much to the welfare of mankind. Mistakes he made, of course, but for sustained and consistent scientific research over a long period of years he has had few equals and no superiors in the medical field. His death in 1895 called forth a world-wide recognition of his achievements, his humanity, his patriotic service to his own country and to mankind at large.

MASSACHUSETTS LEGISLATIVE NOTES

HEARINGS

House 265, which if enacted would require compulsory vaccination of private school pupils, was heard before the Committee on Public Health on February 24.

After the presentation of arguments in favor of the bill by Dr. S. B. Woodward, who has petitioned for this legislation for fifteen consecutive years, its desirability was further advocated by Dr. Greenough and other prominent physicians.

The opponents attacked the bill on the ground of its being superfluous legislation, the alleged dangers incident to vaccination and the violation of personal liberty.

House 760, which is designed to prevent compulsory vaccination under any and all circumstances, was also considered at this hearing.

On March 2 House 781, designed to create a board of registration of magnetic healers, was heard by the Committee on State Administration. The proponents introduced a considerable number of witnesses who told of alleged remarkable cures of patients with many forms of disease who had received no benefit from treatment by regular physicians. The petitioner is, according to his statement, the only magnetic healer in this State and has had no medical education or training.

House 913 designed to create a State Research Laboratory to deal with the unsolved problems of diseases requiring major surgical operations and also House 914 to establish a board to regulate chiropractic methods of treatment and to register chiropractors were considered by the same committee.

Contrary to the custom of former years, very little testimony was presented respecting cures under chiropractic methods. This last bill was opposed by a considerable number of physicians under the leadership of Dr. Greenough, representing the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society. Other eminent physicians of Boston, representing the State Department of Public Health and the Board of Registration in Medicine, presented arguments based on the desirability of maintaining the single standard of fitness to practise medicine and explained the dangers incident to the registration of incompletely educated physicians, especially with relation to public health matters. They supported their arguments by reference to cases which had been treated under chiropractic methods without a diagnosis of the disease and stated that in this way valuable time, which might have been used in possible relief of the suffering of the patient, was lost.

It was especially pleasing to note that at these hearings on public health matters more physicians were in attendance than has been the custom heretofore.

The decisions of the committees are awaited with interest.

MISCELLANY

WORK OF THE BOSTON CITY HOSPITAL IN 1929

The sixty-sixth annual report of the Trustees of the Boston City Hospital deals in compact form with the work of that institution during the calendar year 1929. The report, after consideration of financial details, describes the extensive building program of the hospital, upon which work has been steadily continued in 1930, and is still in progress. The growth of the hospital in number of inmates as well as in buildings has been continuous. During the winter this institution now cares for over thirteen hundred patients at a time. It will not be long before two thousand beds will be needed to handle the immense volume of cases of all kinds which pass through this institution, the largest and best equipped in New England. The work of the Out-Patient Department has also increased in similar measure. The work of the special departments is also described in the report, and there is published an impressive list of scientific papers and addresses by members of the Staff. Six members of the Staff died during the year, Dr. Townsend W. Thorndike, Dr. Edward N. Libby, Dr. Leon W. Jessaman, Dr. Vincent Y. Bowditch, Dr. Morton H. Prince, and Dr. Harold A. Hogue.

The report of the Superintendent and Medical Director presents the statistics of patients. During the year 1929, 24,939 patients were treated in the hospital; and 82,483 patients made 294,154 visits to the various out-patient departments. In addition to these, 1881 patients were treated as contagious cases in the South Department. The total number of deaths during the year was 1915, of which 661, or 2.7 per cent., occurred within forty-eight hours of admission, and 1254, or 5 per cent., occurred after longer stay in the hospital. These figures represent a mortality rate of 7.7 per cent. of the total number of patients treated in the hospital.

It is gratifying to note that bequests to the amount of $105,163 have been made to the Boston City Hospital, of which both principal and interest are available for use. There are also funds of $138,614, of which the interest only is available. As a municipal institution supported by taxation, and benefiting all classes of citizens, the Boston City Hospital deserves to be generously endowed by those of means who have at heart the credit of their city, the furtherance of medical education, and the service which it is in the power of such an institution to render to the community.

HOW FRENCH DENTISTS MET THE INSURANCE QUESTION

As this is written France is the latest great nation to adopt an extensive system of compulsory health insurance involving all branches of the medical pro-

fession. This law went into effect October 1, 1930, but it had long been under consideration.

When Alsace and Lorraine returned to France they brought back the German system of health insurance. In spite of the admitted defects of the German system there was a demand that health insurance be now extended to all of France. The first law passed in 1928, being largely copied from the German scheme, was so full of defects that it raised a storm of protest, particularly from the medical professions.

When the government suspended its operation this gave an opportunity for a complete rewriting. The physicians and dentists, as often under similar conditions, had been caught largely unprepared. But they then got busy in earnest and to excellent effect.

The physicians raised a fund of over one million francs (about $40,000), set about a thorough analysis of insurance, formulated their demands and adopted them at a great mass meeting and then carefully laid out a campaign, which they carried through to a successful conclusion, to secure these demands.

Since the dentists were included in the law from the beginning, they joined with the physicians in support of the latter's demands and then formulated their own program.

Such a fight calls for a strong professional association. The French dental profession is divided into stomatologists and dentists with different educational standards, which previously had made common effort difficult. How the emergency caused them to forget their differences is reflected in these words taken from a circular issued by the stomatologists.

"It is necessary for every practitioner thoroughly to realize that any mistakes made now will govern our dentists in the years to come. * * * It is of paramount importance at this moment that the individualistic spirit in medicine give way to the collective spirit, which alone will permit some defense against the collectivities that are confronting us."

There was a dentist and a physician who were members of the Chamber of Deputies. From the beginning each of these worked both within and without the Chamber to push the following proposals of the medical professions:

1. Complete freedom of choice of practitioner.
2. Legitimation of all professional associations entitled to deal with the insurance societies by the national associations of the profession.
3. Direct payment of all fees.
4. Professional representation on all administrative bodies.
5. Complete safeguarding of professional secrecy.
6. No lay control of professional activities.

Every one of these provisions was written into the law. The dental patient brings to his dentist a letter of introduction from his insurance society. The work is performed; the customary fee charged and paid; the dentist then endorses the work done upon the letter which the patient takes to his insurance society and collects the amount due him, which in most cases is only a part of the fee. For prosthetic work the insurance society must first endorse the estimate of the dentist as to cost.

There are representatives of the medical profession not only on every administrative body, but even on the governing committees of the insurance societies.

Although the insurance societies had more than six million members, nearly all voters, the medical professions, purely by virtue of organization, superior knowledge of the situation, and a well planned campaign won a victory so complete that their German confreres have enviously congratulated them on escaping the evils of the German system. This victory was so complete that instead of the enactment of the law being followed by "doctors' strikes" as in other countries, the insurance societies "struck" in many places and refused to sign the uniform contracts presented by the medical professions in accordance with the law.

It may have been a trifle too complete a victory since the insurance societies are now beseeching the politicians to amend the law to take away some of the advantages gained by the physicians and the dentists. Whatever may be the outcome of this prospective fight, the medical professions will, at least, for the first time have the advantage which the societies have had under every other system, in that they will be in possession of the disputed territory and know exactly how to battle for their professional privileges.

COMMITTEE ON THE STUDY OF DENTAL PRACTICE
R. E. Denny, D.D.S.
H. J. Leonard, D.D.S.
G. S. Millberry, D.D.S.
C. E. Rudolph, D.D.S.
H. E. Phillips, D.D.S., Chairman.
A. M. Simons, B.L., Research.
N. Sinai, D.P.H., Adviser.

CLAIM FOR THE LOWEST TUBERCULOSIS DEATH RATE FOR LARGE CITIES

Chicago, in the *Bulletin of the Chicago Municipal Tuberculosis Sanitarium*, claims to have the lowest tuberculosis death rate of the large cities of the United States. The figures are as follows: Chicago 66.1, New York 73.0, Philadelphia 81.2, Detroit 82.5, Los Angeles 104.0, Baltimore 100.6, Boston 77.6, Pittsburgh 75.4. The figures for St. Louis are not yet available for 1930 but in 1929 were 92.0.

GOOD WORK IN NEW HAVEN, CONNECTICUT

Intensive efforts to eradicate diphtheria by the use of toxin-antitoxin have been in operation in New Haven with the result that in 1930 no child died of diphtheria and only fourteen cases were reported.

CORRESPONDENCE

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Ill.
February 28, 1931.

Editor, The *New England Journal of Medicine:*

In addition to the articles enumerated in our letter of January 31 the following have been accepted:

Health Products Corporation
Marine Liver Extract (White)

Schering Corporation
Iopax

The following articles have been exempted and included with the List of Exempted Medicinal Articles (New and Nonofficial Remedies, 1930, p. 477):

Chas. Pfizer & Co.
Cinchophen-Pfizer

G. D. Searle & Co.
Ampules Sodium Thiosulphate (Searle) 5 cc. +
Ampules Sodium Thiosulphate (Searle) 10 cc. +

Yours truly,
W. A. PUCKNER, *Secretary,*
Council on Pharmacy and Chemistry.

NEWS ITEMS

A COMPLIMENTARY DINNER TO DR. WALTER L. BIERRING—The Des Moines Medical Library Club has arranged for a complimentary dinner in honor of Dr. Walter Lawrence Bierring, Saturday, March 7, 1931, at six-thirty o'clock, at the Des Moines Club.

THE CONFERRING OF THE BIGELOW MEDAL ON PROFESSOR GEORGE GRAY TURNER—Professor George Gray Turner of Newcastle, England, has been chosen by the Boston Surgical Society as the recipient this year of the Bigelow Medal, which will be conferred on the evening of June 10, the last day of the meeting of the Massachusetts Medical Society. All members of the Society will be cordially invited to attend this meeting, which it is to be hoped will be of interest and importance, to correspond with the previous meetings at which the medal has been conferred.

The previous recipients of the medal have been William J. Mayo, Rudolph Matas and W. W. Keen. Professor Turner will also be the guest of the Massachusetts Medical Society during its meeting and will speak at the anniversary dinner. He is also expected to make a short address before the Surgical Section of the Society at its meeting Wednesday morning, June 10.

DR. SWIFT READS A PAPER IN CHICAGO ON DISORDERS OF SPEECH—Dr. Walter B. Swift read a paper in Chicago during Christmas vacation before the American Society for the Study of Disorders of Speech, on the subject "Why the Visual Treatment is the Best for Stammering." He said in part: Visual-building is proven to be the best treatment for that speech disorder called Stammering. Statistics were cited showing that side-developments of increased mental powers, resulted from the treatment, according to ages as follows:

Ages	Percentage
1-10 years	100%
10-20 "	80
20-30 "	70
30-40 "	60
40-50 "	25

School statistics show: "The severe stammerers have disappeared from the Cleveland Public Schools" as reported by the local supervisor Miss M. Claudia Williams, Board of Education, Cleveland, Ohio. Another interesting fact is that 50% of the cases remain cured after a five-year check-up. This is noteworthy, considering that these speech classes meet only once a week.

DR. CARL R. O. ELFES IS A FUGITIVE FROM JUSTICE—Dr. C. R. O. Elfes after serving on the staff of the Worcester State Hospital for three months has disappeared leaving a woman companion who was supposed to be his wife.

Police authorities throughout the country have been asked to be on the lookout for Dr. Elfes.

THE ANNUAL MEETING OF THE CHILDREN'S HOSPITAL OF BOSTON—This meeting was held February 26, 1931. The reports of the officers show that the deficit for last year was $24,729.84 and that it will be necessary to raise at least $150,000 for operating expenses for 1931.

Fortunately the interest in this institution is growing as shown by gifts and endowments from time to time. One large bequest of $240,852.50 from the estate of Miss Annie H. Brown has been paid to the hospital as shown by the report of the executors.

DR. HODGKINS SPEAKS BEFORE THE WATERTOWN MEDICAL CLUB—Dr. Edward M. Hodgkins, Assistant Professor of Surgery at Tufts College Medical School spoke before the Watertown Medical Club March 2 on The Changing Conception in the Operative Treatment of Inguinal Hernia. The lecture was illustrated with lantern slides.

NOTICES

MEDICAL CLINIC

Hopital de la Charité
47, Rue Jacob—Paris
Professor Sergent, Member of the Academy of Medicine

Ten lectures on the diseases of the lung, with x-ray projections and anatomical specimens, each lecture being followed by practical demonstrations by Mm. Bordet, Turpin, Kourilsky, Benda and Iselin, occupying the positions of former clinical chiefs and clinical chiefs of the clinic.

Lectures will take place from July 6 to July 11, 1931.

The afternoon will be devoted to theoretical lectures (from 2.30 P. M. to 3.30 P. M., and from 4 P. M. to 5 P. M.).

In the morning practical demonstrations will be held in the wards under the guidance of Professor Sergent.

PROGRAM

Dr. F. Bordet: Lipiodol in the diagnosis of the diseases of the respiratory tract.

Dr. F. Bordet: Bronchiectasis.

Dr. Kourilsky: Abscess of the lung.

Dr. Kourilsky: Gangrene of the lung.

Dr. Turpin: Carcinoma of the lung (primary).

Dr. Benda: Syphilis of the lung.

Dr. Turpin: Mechanism of tuberculous infection of the lung.

Dr. Kourilsky: Tuberculosis of the lung and the new data on the tubercle bacillus.

Dr. Iselin: Surgical treatment of pulmonary tuberculosis.

Dr. Iselin: Surgical treatment of pulmonary suppuration.

Fees: 500 Francs (20 Dollars).

A certificate, signed by the Professor, will be delivered after the course to every doctor who has attended it regularly.

For further information and registration, apply to the "Association pour le Dévelopment des Relations Médicales," Salle Béclard, Faculté de Médecine, Paris (6e).

MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P. M. on Thursday, March 12, in the Amphitheatre of the Peter Bent Brigham Hospital, a medical clinic will be given by Dr. Henry A. Christian, to which physicians are cordially invited. These clinics will be held regularly on Thursday afternoons.

THE INTERNATIONAL HOSPITAL CONGRESS

The International Hospital Committee has issued invitations to take part in the Second International Hospital Congress which will be held in Vienna (Austria), from June 8 to 14, 1931. The reports and questions for consideration are:

a) Reports:

Hospital Building Costs (Mr. Distel, Hamburg).

Nursing (Miss Reimann, Geneva).

Hospital Terms and Definitions (Dr. Wirth, Frankfurt).

Auxiliary Hospital Activities (Dr. Wortman, Hilversum).

Hospital Legislation (Mr. Harper, Wolverhampton).

Cost of Maintenance of Patients in Hospitals (Mr. Gouachon, Lyon).

b) Questions:

Dispensaries (Dr. E. L. Corwin, New York).

Nutrition (Prof. von Noorden, Vienna).

Effect of Health Insurance on Hospital Practice (Dr. T. B. Layton, London).

The Place of Neurology and Psychiatry in the General Hospital (Geheimrat Dr. Alter, Düsseldorf).

An International Hospital Exhibition, set up by the Organizing Committee and including not only scientific but industrial exhibits, will be held during the Congress.

While the Congress is in progress, arrangements will be taken for the visit of the Austrian State and municipal social institutions and later, of hospitals in Budapest.

From May 14 to June 6 the American Express Company, Inc., will also organize a schedule of visits for the convenience of delegates to British, Danish and German hospitals.

All correspondence should be addressed to the Secretary of the Second International Hospital Congress, Vienna (Austria) VII, Messeplatz 1. Applications to take part in the Congress may also be directed to any of the branch-offices of the American Express Company, Inc., or the Oesterreichisches Verkehrs-bureau (Austrian Tourist Office).

REMOVAL

Dr. Newman Cohen announces the removal of his business address from 1069 Boylston Street, to 536 Commonwealth Avenue, Boston.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following-named open competitive examinations:

Senior Medical Technician (Bacteriology or Roentgenology), $2,000 a Year
Medical Technician (Bacteriology or Roentgenology), $1,620 a Year

Applications must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than April 1, 1931.

Certain specified education and experience is required.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or custom-house in any city.

REPORTS AND NOTICES OF MEETINGS

WILLIAM HARVEY SOCIETY

On Friday evening, February 13, 1931, Dr. Howard M. Clute, chief surgeon at the Lahey Clinic, addressed a large audience at the Beth Israel Hospital Auditorium, on the subject "Goitre." The lecture was sponsored by the William Harvey Society of Tufts Medical School.

Dr. Edward M. Hodgkins, Assistant Professor of Surgery at Tufts Medical School, was chairman of the evening.

Originally, Dr. Frank H. Lahey, of the Lahey Clinic, was scheduled to talk, but due to the fact that Dr. Lahey was unexpectedly called away, Dr. Clute kindly consented to fill in for Dr. Lahey and deliver the same type of address.

Dr. Clute illustrated his subject with slides which were very interesting and made it easy to follow his remarks. He classified thyroid conditions into four divisions:—endemic, exophthalmic, malignant, and inflammatory.

The endemic goitre is due to a deficiency in diet. There is a lack of iodine intake by the patient. This lack is accompanied by a great bodily strain, and is undoubtedly the cause of endemic goitre. Women have endemic goitre much more often than men. This is due to the fact that there are four great strain periods in women when endemic goitre may occur. These periods are as follows:—adolescence, pregnancy, lactation, and the menopause. In the early cases such as at adolescence, one sees a condition of diffuse, symmetrical, colloid cysts. If the adolescent goitres are untreated, they continue to grow into the form of nodules which arise from the degenerated areas of the original colloid cyst. As the patient gets older, cysts may develop into the adenomatous type or nodular type, varying in size from a pea to a grapefruit. Here the goitre is irregular in size, asymmetrical and nodules are felt. The treatment in these cases should be started early because at about forty years of age or more they often develop a hyperthyroid condition, or else, may grow downward to become substernal. Also a small percentage of the adenomatous type become malignant. In the early endemic goitres, if the goitre is small, the treatment is medical. If the goitre is large, unsightly and causing pressure symptoms, then surgery is indicated. Iodine is very valuable as a prophylaxis of endemic goiter, as evidenced in many goitre districts. Ten milligrams of iodine were given once a year to school children approaching adolescence. This amount was sufficient to practically wipe out the condition. On the other hand, groups of children in the same district who were not treated developed many cases of endemic goitre.

There may be also single, discrete, adenomatous types, which arise in some patients who never had a thyroid disturbance. These are known as fetal adenomata. The fetal adenomata will cause the following:—may simulate any thyroid disturbance, may become toxic, may give pressure symptoms, may extend to become substernal, and are precancerous. In any of the conditions of the thyroid which become substernal, interference with the oesophagus, trachea, and other structures results. In nodules of the thyroid, the trachea is deviated, but with cancer it is invaded. Substernal goitre is diagnosed when the lower pole cannot be felt. It may grow retrotracheal or retrolaryngeal.

In cancer of the thyroid, the gland is very irregular, stony hard, immovable, involves the laryngeal nerve, and other structures, and arises from fetal adenomata.

In exophthalmic goitre the glands show hyperplasia. This occurs in young people. There is a sudden onset, of two or three months' duration, with a rapidly downhill course. The growth is symmetrical, hard, and with great vascularity. Often a bruit or thrill and pulsations can be felt. The following are characteristic in exophthalmic goitre:—an exophthalmos is usually present in the majority of the cases, from which scratches, ulcers, etc., of the eye may lead to complications which may result in blindness, gastric crises which are brought on by eyestrain, emotion, or trauma and are evidenced by diarrhea and vomiting, which are serious symptoms; great changes in general health in which the patient has lost a great deal of weight, is very nervous, has tremors, and other symptoms. The treatment in exophthalmic goitre medically indicates large doses of Lugol's. In the gastric crises, large amounts of glucose and fluids should be given. The exact action of Lugol's is not definitely known, but one theory has been advanced that the iodine exerts a pressure in the hyperplastic thyroid gland which decreases the functional activity by this mechanical pressure. This lasts about two months and when the gland gets accustomed to this pressure it reverts back to the old symptoms. The surgical treatment of exophthalmic goitre is partial removal.

Dr. Clute believes that iodine should be used, first, as a prophylaxis against endemic goitre, and second, before operations to prevent thyroid storm.

THE MASSACHUSETTS TUBERCULOSIS LEAGUE

The Semi-Annual Meeting of the Massachusetts Tuberculosis League was held on Monday, February 9, at Hotel Statler, Boston.

In the absence of Dr. Frederick T. Lord, who was ill, Dr. Francis P. Denny of Brookline, Vice-President, was in the Chair.

Rev. Father J. F. McGillicuddy of North Brookfield delivered the invocation.

The following resolution was adopted and ordered sent to Dr. Lord:

"The Massachusetts Tuberculosis League in Semi-Annual Meeting assembled sends cordial greetings to our President, Dr. Frederick T. Lord, and best wishes for his early restoration to sound health."

Mr. Frederick D. Hopkins, Executive Secretary of the National Tuberculosis Association, spoke on "The 1930 Conference of the International Union Against Tuberculosis at Oslo, Norway." Mr. Hopkins said in part: "The outstanding feature of the program was the day devoted to discussion of vaccine. This was one of the great days in the life of Dr. Albert Calmette, Associate Director of the Pasteur Institute in Paris, who is now known throughout the world for his vaccine, Bacillus Calmette-Guerin, or B C G.

"I should explain that the plan of the Conference is to have three days of sessions with a single topic each day, the subjects having been recommended about a year in advance by the Council. There is a chief reporter, and this year, for the first time, there

were ten formal discussions of 15 minutes each by delegates from various countries, the names also being scheduled in advance by the Council. This constituted the morning session and the afternoon was open for general discussion to those who had submitted their names in advance to the Union office. All of these speakers were in a sense endorsed by the various national associations or governments as the Union is a closed affair, attendance being restricted to the members and the so-called 'Members of the Conference' paying the admission fee at the registration office, after endorsement by national associations or governments.

"In accordance with this plan, Dr. Calmette was the reporter and his subject was 'Preventive Vaccination Against Tuberculosis.' At 8:30 A. M. the meeting was in order in the great hall with the distinguished looking audience eagerly waiting to hear about B C G from the great Calmette himself. Prince Olav was in attendance, sitting in front with his aide. Dr. Calmette of course spoke in French and gave a masterly presentation of his thesis, not only telling about his work with B C G but answering three or four of the principal arguments which had been brought forward against its use. I shall not attempt to cover Dr. Calmette's paper as all of you have undoubtedly read of B C G and if you desire a good summary of the presentation at Oslo, I will refer you to the article by Mr. Philip P. Jacobs of the National Association Staff which appears in the November, 1930, issue of the *Journal of the Outdoor Life*. Naturally all of the delegates were listening to the presentation with knowledge of the tragic happenings earlier in the year at Lubeck, Germany, where the B C G vaccine had been received from Paris and had supposedly been given to a number of children with the result that more than 60 deaths occurred within the next few weeks. Without going into this matter fully, I may say that investigations were immediately started locally, and by the German Reich and also within the Pasteur Institute. Dr. Calmette's official statement, received at the National Office before we left for Oslo, showed that the vaccine had been subjected to the usual tests before sending it to Lubeck, that the stock prepared in the laboratory at the same time had been used elsewhere without ill effect and the suggestion was made that either the vaccine had become contaminated after arrival or through some error altogether different material had been given to the children. A later report from the German Ministry of the Interior was published in the *Journal of the American Medical Association*. After explaining the progress of the investigation it states that 'from the results of recent researches it is evident that the B C G culture furnished from Paris was unobjectionable in every respect and was not virulent'.

"After the report, the first person to take part in the formal discussion was Dr. F. Neufeld of Berlin. Probably there were many in the room who were speculating as to what was going to happen. Dr. Neufeld urged that the widest possible opportunity should be given for further experiments with B C G so that full data could be collected as to its usefulness. While he did not believe that the time had come to make a pronouncement that the use of B C G was a success, he thought that nothing should be put in the way of further study. This statement from a German was received with great applause and as Dr. Neufeld finished speaking, Dr. Calmette arose and shook hands with him. With one or two exceptions, most of the speakers favored Calmette's conclusions. Dr. William H. Park of the New York City Department of Health explained the work with B C G among 250 children in New York City, and at the afternoon session Dr. Kereszturi showed some of her charts and explained briefly the technique of her work, as she is actively in charge of the administration of B C G under Dr. Park. Dr. Bela Schick also confirmed the remarks made by Dr. Kereszturi. Some of Dr. Calmette's critics did not take part in the meeting. Perhaps I should insert here Mr. Jacobs' paragraph, summarizing these criticisms, which is as follows:

> 'On previous occasions certain phases of Calmette's work have been challenged. Certain attempts to immunize cattle by vaccination with B C G have not been very convincing. Several workers claim to have increased the virulence of B C G by passing it from animal to animal. Petroff has succeeded by laboratory methods in isolating a virulent strain of tubercle bacillus from B C G cultures. Greenwood has analyzed Calmette's earlier statistics, has pointed out certain fallacies, and has contended that the conclusions based on the interpretation of the statistics are not warranted. A few writers have presented evidence to show that groups of children of tuberculous mothers where household conditions are carefully supervised fare as well or better than similar groups treated with B C G reported by Calmette.'

"No matter what the conclusions may be as to the merits of B C G this day's session in Oslo may be put down as one of world-wide interest, as an excellent presentation of the whole subject with many nations participating, and certainly a great day of acclaim for Calmette."

Dr. John B. Hawes, 2nd, President of the Boston Tuberculosis Association, spoke on "Progress in the Work of the Boston Association." Dr. Hawes said in part: "I will speak to you today of the three things which are high spots in my ten years as President of the Association:

1. Prendergast Preventorium
2. Health Work in Ward 9
3. Rehabilitation Workshop.

"A survey which Dr. Murray P. Horwood made for us showed that the mortality from tuberculosis in Ward 9—that district south of Columbus Avenue—was shockingly high. The first thing we did was to find the proper person to carry on a health program in this Ward. We found just the right person in Miss Hassie Towler, R.N., to whom a great

deal of the credit for the work in this section is due.

"We took one block between Tremont Street and Shawmut Avenue, and tackled it as with a fine tooth comb. The difference today is perfectly amazing. Where there were garbage cans, ashes, dirt and disease we now have attractive backyards with flower and vegetable gardens. Miss Towler taught the meaning of the words—health, hygiene and good living. There is now a bond of brotherhood in this neighborhood—a sense of team play. We have Health Guilds, Red Cross classes and domestic science classes at our office on Columbus Avenue for the people in this section. Recently the children of the Ward presented a health play. We feel that in making this section a more habitable place we have carried out the motto—'Do the duty which lies nearest to you.'

"Now as to Prendergast Preventorium; because of lack of funds we were forced to cut our budget $6,000 last year. I am proud to say that we carried on however and that we did not exceed our budget. We have been endeavoring to get the City to pay for children whose parents are unable to do so. We feel that it is better to pay to keep children from developing tuberculosis rather than to pay for their maintenance at a sanatorium later in life.

"Mayor James M. Curley is in sympathy with our endeavors and has sponsored a Bill now pending in the Legislature to permit cities and towns to make provision for the care of children predisposed or susceptible to tuberculosis.

"Our Committee felt last year that there were perhaps 60% of the parents of the children at the Preventorium who could pay something towards their support if it were not more than 10 cents per week. Mrs. Edwards and Miss Billings talked with the parents and obtained their coöperation. We got nearly $400 in board from parents who you would think at first glance could not pay a cent.

"Every now and then in the midst of this pretty discouraging work some good things happen. Recently, two brothers of a former young man patient of mine who died from tuberculosis came to me and said they wanted to do something to help our cause as a memorial to him. I suggested that a Workshop for the boys at our Preventorium would be the best kind of a memorial to their brother as it would teach the boys to learn something useful during their stay at Prendergast. This met with their approval and the funds have been provided for the shop.

"I hope that some day some good angel will come along and give us the money for a domestic science room for the girls.

"Finally—Mayor James M. Curley gave me the finest kind of a birthday present last summer when he gave us the use of the old Tyler Street School for $1.00 a year. In October, after refinishing the six rooms in the School, we opened up a Workshop for ex-consumptive men and women anxious to get back on the job—men and women who generally try to kill themselves by getting back on an eight-hour-a-day job too soon. Employers do not want lame ducks who are able to work only a certain number of hours each day. We are making these lame ducks into wholesome and efficient ducks. They work from one to seven hours a day depending upon their physical condition. They have monthly examinations. A nutritious luncheon is furnished without charge each day. They are earning money and keeping their self-respect and self-confidence.

"Another good angel outfitted the shop with the very best machinery and has financed it for three years. After that, we hope the Shop will practically carry itself.

"The products of this Workshop will not be useless knick-knacks but our Business Manager canvassed the large stores of Boston to find out what they could use and so orders have been filled for merchandisable articles for Filene's, Jordan Marsh, and Hovey's.

"The exhibit here today shows what efficient and artistic work is produced at the Shop.

"Because of all these things I think we have reasons to say with satisfaction that the work of the Boston Tuberculosis Association goes on developing gradually, sanely and along lines that are eminently practical."

Dr. Wilson G. Smillie, Professor of Public Health Administration, Harvard School of Public Health, spoke on "The Common Cold."

Dr. Denny then introduced Miss Emily Bissell of Wilmington, Delaware, who spoke briefly of the progress of the Seal Sale since she inaugurated it in Delaware in 1906.

At the business meeting of the Board of Directors, Dr. Denny presiding, the Executive Secretary of the League recommended that the League go on record as favoring the following Health Bills now pending in the General Court:

House 907—Providing that cities and towns be authorized to make provision for the care of children predisposed or susceptible to tuberculosis.

House 80—Defining pasteurized milk.

House 81—Requiring all milk sold in the Commonwealth, except in communities of 5,000 and under, to be pasteurized or from tuberculin free cattle.

House 265—Requiring private schools to insist upon the vaccination of children before admission.

House 476—Relative to the furnishing by county tuberculosis hospital districts of diagnostic service.

House 83—To provide for promoting the cure, alleviation and prevention of rheumatism.

The Executive Secretary further requested that the League go on record as opposing the following proposed legislation:

House 781—For the establishment of a board of examination and registration to regulate the practise of magnetic healers.

House 914—For the establishment of a board of registration in chiropractic.

It was unanimously voted that the League endorse House Bills 907, 80, 81, 265, 476 and 83 and go on record as opposing House Bills 781 and 914.

The 1931 budget was adopted as presented by the Budget Committee.

Following this meeting there was a Health Education Meeting for Secretaries and teachers presided over by Miss Jean V. Latimer, Educational Secretary of the League.

THE ESSEX SOUTH DISTRICT MEDICAL SOCIETY

This Society held its regular meeting at Danvers State Hospital on Wednesday, February 11, 1931.

5:00 P. M. Clinical Session:

1. The Modern Treatment of Neurosyphilis, Dr. Henry A. Tadgell, Assistant Physician.

2. The Study of Lesions of the Brain with Pathological Demonstrations, Dr. Anna M. Allen, Pathologist.

3. The Legal Aspect of Commitments, Dr. Edgar C. Yerbury, Assistant Superintendent.

7:00 P. M. Dinner.

8:00 P. M. Speaker: "Juvenile Delinquency", by Dr. Bryant E. Moulton, Assistant Director, Judge Baker Foundation.

WM. T. HOPKINS, *Reporter.*

BRISTOL COUNTY ORTHOPAEDIC CLUB

The Bristol County Orthopaedic Club held a Meeting at St. Luke's Hospital, Allen Street, New Bedford, Mass., February 24, 1931, at 8:15 P. M.

The following program was presented:

(a) Treatment of Compound Fractures, Dr. Webster.

(b) Treatment of Osteomyelitis, Dr. T. B. Horan.

(c) Treatment of Fractures of Shaft of Femur, Dr. Edw. W. Burt.

(d) Treatment of Fractures of Neck of Femur; Pathology of Fractures, Dr. E. E. Hussey.

EARLE E. HUSSEY, M.D., *Secretary.*

THE AMERICAN PUBLIC HEALTH ASSOCIATION

The Sixtieth Annual Meeting of the American Public Health Association will be held in Montreal, Quebec, September 14-17. The Windsor Hotel will be headquarters.

It is hoped that the medical profession will interpret this announcement as an invitation to attend that convention.

C. C. YOUNG, D.P.H., *Chairman.*

MASSACHUSETTS ITALIAN MEDICAL SOCIETY

The regular meeting of the Massachusetts Italian Medical Society will be held at the Kenmore Hotel, 496 Commonwealth Avenue, Boston (Telephone Kenmore 2770), on Monday evening, March 9, 1931, at 8:30 P. M.

After the routine work the Society is fortunate in having as its private invited guest and speaker, Dr. Samuel A. Levine of the Peter Bent Brigham Hospital, who is one of the outstanding cardiologists. He will talk on "Some Points of Interest Concerning Heart Disease," a subject of major interest.

A large gathering should be present to extend the courtesy of the Society to Dr. Levine, who will begin his talk at 9:30 sharp.

We hope that members will make a special effort to be present and extend invitations to medical friends.

Refreshments.

CARL F. MARALDI, M.D., *Secretary.*
276 Commonwealth Avenue.

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held on Tuesday, March 17, 1931, at 12 noon, at the office of the Boston Tuberculosis Association, 554 Columbus avenue, Boston.

The speaker will be I. J. Walker, M.D., Surgeon-in-Chief, Harvard Teaching Service, Boston City Hospital; Clinical Professor of Surgery, Harvard Medical School. His subject will be, "Gall Bladder Disease."

The usual luncheon will be served, and all physicians are cordially invited to attend this meeting.

MASSACHUSETTS GENERAL HOSPITAL

A Clinical Meeting of the Staff of the Massachusetts General Hospital will be held in the Moseley Memorial Building, on Thursday, March 12, 1931, at 8:15 P. M.

PROGRAM

1. Presentation of Cases.

2. Hypersensitiveness in Man—Underlying Principles and Varieties. Dr. Hans Zinsser.

3. Clinical Approach to the Diagnosis and Treatment of Hypersensitiveness in Man. Dr. Francis M. Rackemann.

Physicians, Medical Students and Nurses are cordially invited to attend.

COMMITTEE ON HOSPITAL MEETINGS.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held on Tuesday evening, March 10, in the amphitheatre of the Peter Bent Brigham Hospital at 8:15 o'clock.

PROGRAM

Presentation of cases.

Moving pictures of the Living Chick Heart, by J. L. Bremer, M.D., Associate Professor of Histology at the Harvard Medical School.

Effects of Experimental Lead Poisoning of the Blood, by Ernest Falconer, M.D., Associate Clinical Professor of Medicine at the University of California.

WILLIAM P. MURPHY, M.D., *Secretary.*

PHI LAMBDA KAPPA FRATERNITY

An invitation has been extended to attend an illustrated symposium on Endoscopy in Visualization

of the Alimentary and Respiratory Tract before the Phi Lambda Kappa Fraternity.

Speakers:

1. Bronchoscopy and Endoscopy—Dr. Louis Wolfson, Boston.

2. Intra-Gastric Photography—an aid in the diagnosis of diseases of the stomach—Dr. Isidore Feder, New York.

3. Procto-Sigmoidoscopy—Dr. I. R. Jankelsohn, Boston.

At the Auditorium—Beth Israel Hospital, 330 Brookline Avenue, Boston, Monday, March 9, 1931, at 8:15 P. M.

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

March 9-30—Lectures on Keeping Mentally Fit. Given under the auspices of the Massachusetts Division of University Extension and the Massachusetts Society for Mental Hygiene. Boston.

Lectures, in the Gardner Auditorium, State House, Boston, Monday evenings.

Course Leader: Dr. Henry B. Elkind, Medical Director, Massachusetts Society for Mental Hygiene.

March 9—The Job and Mental Health. Elton Mayo, Harvard Graduate School of Business Administration.

March 16—Emotion and Intellect in Adult Life. William B. Terhune, M.D., Austen Riggs Foundation, Stockbridge.

March 23—Normal and Abnormal Fear. Abraham Myerson, M.D., Professor of Neurology, Tufts College Medical School.

March 30—"Nerves"; Their Meaning in Our Lives. E. van Norman Emery, M.D., Medical Director, Connecticut Society for Mental Hygiene.

March 9—Phi Lambda Kappa Fraternity. See page 525.

March 9—Massachusetts Italian Medical Society. See page 525.

March 9-19—Institutes for Public Health Nurses on Tuberculosis, Child Hygiene, Social Hygiene. See page 470, issue of February 26.

March 10—Harvard Medical Society. See page 525.

March 12—Medical Clinic at the Peter Bent Brigham Hospital. See page 521.

March 12—Massachusetts General Hospital. See page 525.

March 13—The William Harvey Society at the Beth Israel Hospital. See page 471, issue of February 26.

March 17—South End Medical Club. See page 525.

March 23-27—Fifteenth Annual Clinical Session of the American College of Physicians. See page 240, issue of January 29.

April 1-June 3—Cardiac Course. See page 854, issue of October 23, 1930.

April 10—The William Harvey Society. See page 471, issue of February 26.

May 11-14—Meeting of the National Tuberculosis Association at Syracuse. See page 1310, issue of December 25.

June 8-14—International Hospital Congress. See page 521.

July 6-11—Medical Clinic, Paris. See page 520.

July 27-31—Third International Congress of Radiology, Paris. Complete notice appears on page 385, issue of August 21.

September 14-17—The American Public Health Association. See page 525.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

April 16—Taunton Woman's Club.

September 17.

Essex North District Medical Society

The next meeting will be held at the Amesbury Country Club early in May.

Essex South District Medical Society

Thursday, May 7—Censors meet at Salem Hospital at 3:30 P. M.

Tuesday, May 12—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. Morris Fishbein, Editor of the A. M. A. Journal of Chicago. Subject: "History of Medical Cults." Ladies invited.

Franklin District Medical Society

March-May—The meetings are held on the second Tuesdays of March and May at 11 A. M. at the Weldon Hotel, Greenfield.

Middlesex East District Medical Society

March 11—At Reading.

May 13—At Wakefield.

Norfolk District Medical Society

March 31—Dr. Arthur W. Allen. Subject to be announced (will deal with circulatory diseases). Hotel Kenmore, 8 P. M.

May—Annual Meeting. Date and details to be announced.

May 7—Censors' Meeting for examination of candidates at 171 Warren Street, Roxbury, 4 P. M. Candidates from schools on accepted list will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass., two weeks prior to date of examination. Fee for all candidates $10.00.

FRANK S. CRUICKSHANK, Secretary.

Norfolk South District Medical Society

Spring meetings are as follows:
April 2, May 7.

All meetings begin at 12 noon. Meetings will be held at the Norfolk County Hospital, South Braintree.

The censors will meet on May 7 at 11:30 A. M. at the Norfolk County Hospital, South Braintree.

NATHAN R. PILLSBURY, Secretary.

Suffolk District Medical Society

March 25-April 29—Combined meetings with the Boston Medical Library. These meetings will be held as specified below on Wednesdays, at 8:15 P. M.

March 25—Clinical Program, Beth Israel Hospital.

April 29—Annual Meeting. Election of Officers. Boston Medical Library.

The medical profession is cordially invited to attend all of these meetings.

GEORGE S. DERBY, M.D.,
President, Suffolk District Medical Society.
LELAND S. McKITTRICK, M.D.,
Secretary, Suffolk District Medical Society.
HILBERT F. DAY, M.D.,
Boston Medical Library.

BOOK REVIEWS

A Text-Book of Practical Therapeutics with Especial Reference to the Application of Remedial Measures to Disease and Their Employment Upon a Rational Basis. By HOBART AMORY HARE. Lea and Febiger, Philadelphia. XXI Edition. Pp. 1104. Price $7.50.

"Hare's Therapeutics" is a concise statement of proven methods of bedside treatment. It is conveniently arranged in four sections relating to various aspects of therapeutics. The first is a general discussion of the principles of the action of drugs, the methods of using them and the art of prescription writing. The second section is devoted to the consideration of individual drugs, their action, indications for use, and practical methods of administration based upon the author's extensive experience. The pages devoted to "remedial measures other than drugs" are particularly valuable because of the lucid exposition of universal procedures not ordinarily described in medical textbooks. The last third of the book is occupied by the discussion of specific measures to be applied to individual diseases.

It is hard to evaluate a book which attempts to cover so much material in so few pages. It is inevitably uneven, in that full explanation of one subject necessitates curtailing the space devoted to another. In this particular volume disposition seems unu-

sually fortunate, and for the material covered one must feel that the author really succeeds in telling not only what to do, but how to do it. However, with the modern tendency to give drugs only with definite indications, one must feel that the régime recommended in many instances implies overtreatment—neither therapeutically necessary nor acceptable to the patient. One cannot criticize too strongly the implication that Digitalis is contraindicated in hypertension.

Nevertheless there is much that is of inestimable value in this book. Best of all it is a handy reference source for the treatment of the common diseases, furnishing a plan of therapy and many usable prescriptions. The busy practitioner will find it a handy desk guide in difficult problems of treatment.

Piersol's Human Anatomy. Ninth Edition under the supervision of G. CARL HUBER, M.D., Sc.D. J. P. Lippincott Company, Philadelphia. Price $10.00.

This edition of Piersol's Human Anatomy is one of the up-to-date standard publications covering over two thousand pages of printed matter with seventeen hundred and thirty-four illustrations of which fifteen hundred and twenty-two are original and four hundred and sixty are in color.

The literary and mechanical excellence of this publication will appeal to all who need an authoritative textbook on this valuable aid to the study of anatomy.

Clio Medica: A Series of Primers on the History of Medicine, edited by E. B. KRUMBHAAR. V. Physiology. By JOHN F. FULTON, M.D. New York: Paul B. Hoeber, Inc., 1930. xvi + 141 pages. Price, $1.50.

This book covers, in the brief space of about 125 pages, the whole history of physiology. Naturally, the account of physicians who have developed this subject and the description of their work is very brief. The author, however, has cleverly divided the book into parts so that the important aspects of physiology are all brought to the reader's attention. The first chapter presents a picture of physiology as known to Aristotle and Galen. Then follows a longer chapter on "The Circulation of the Blood" with Harvey as the leading physiologist. Two chapters of similar nature are concerned with "Respiration" and "Digestion," and the last section of the book deals with modern physiology and "The Rise of the Teaching Laboratories." There is a good bibliography and index.

This book can be highly recommended, being the best digest of the history of physiology yet published in so brief a form. There are a few excellent illustrations. The volume forms one of a series of small books on the history of medicine, moderately priced and aimed to appeal to all physicians and to students of medicine. In the opinion of the reviewer, who has read all five books of this series already published, Fulton's "Physiology" seems to be the best of the list, both on account of its splendid scholarship and excellent style and also because of its comprehensiveness.

Radiographie Néphro-Cholécystique. By M. DE ABREU. Paris: Masson et Cie. Price 40 francs.

This monograph, written by a Brazilian, is essentially an x-ray atlas of differential diagnosis, particularly of renal and biliary calculi, although some matters of general differential diagnosis between renal and gall bladder disease are discussed. The chief emphasis throughout is upon atypical radiographic projections, particularly oblique and lateral-oblique angles. By this means calculi are projected away from the renal shadow or the shadow of the gall bladder filled with Graham dye, and more accurate diagnosis is possible. In addition, the author emphasizes the importance of doing pyelography in the Trendelenburg position. He feels that the pelvis and calyces will be more thoroughly filled in this position.

The subject matter of the monograph is not essentially new, but has been well known for many years to practical roentgenologists. However, the collection of a number of similar cases and the emphasis upon the atypical projections render the monograph of some value. The reproductions in half-tone are excellent.

Nosography: The Evolution of Clinical Medicine in Modern Times. By KNUD FABER, M.D., LL.D. 2nd ed., revised. New York: Paul B. Hoeber, 1930. xvii + 222 pages. Price, $3.75.

In the history of clinical medicine two main lines of thought have developed: first, a description of diseases—used to great advantage by Sydenham and Laennec; secondly, there have been those clinicians who have paid little attention to diseases as such but have been interested in the abstract concept of disease. This is the doctrine of the German "physiological medicine".

These two lines of thought in the evolution of medicine can be traced back to the times of antiquity and the following of their history by Professor Faber makes interesting reading in the book under consideration. First published in 1919, this volume has been so attractive to the medical public that a second edition is now called for. Only a few alterations have been made in the text and the original character of the book is preserved.

Manual of the Diseases of the Eye. By CHARLES H. MAY. 13th edition, revised. 444 pages. William Wood and Co., New York. Price $4.00.

This useful book on diseases of the eye has been revised and many additions have been made. There are now several pages on the slitlamp included. It is very well illustrated, and presents the principal features of ophthalmology in a concise and readable form.

Medical Art Calendar for the Year 1931, published by J. P. Kruseman, The Hague, Holland. Price, $1.50.

This calendar forms a unique item in medical history. It contains reproductions of twenty-five interesting paintings, all with medical interest. They have been selected with care and carefully reproduced, with notes in regard to the painters. The calendar makes an attractive gift. It may be purchased directly from the publisher.

Therapeutic Uses of Infra-Red Rays. By W. Annandale Troup, M.C., M.D., Ch.B., London, England. With foreword by Sir Wm. Willcox, K.C.I.E., C.B., C.M.G., M.D. 1 Volume, 57 pages, published 1930. price $1.50.

This book is one of the very few published references of infra-red radiation. It contains considerable data on this part of the light spectrum, and is useful as a guide to the student or practitioner. The statements of the author are based on many years of experience in this field. Some of the case reports give the reader the impression that the subject is presented in a manner that is exaggerated and over-enthusiastic. On the other hand, this little book contains much information which is authentic. It is recommended as an interesting account of the value of light, particularly the infra-red as a therapeutic measure.

Landmarks and Surface Markings of the Human Body. By L. Bathe Rawling, M.B., B.C. (Cant.), F.R.C.S. New York: Paul B. Hoeber, Inc., 1927. Price $3.00.

Previous editions of this admirable manual of surface anatomy have been reviewed in the *Journal* with approbation. This sixth edition, published in England in 1924 and in America in 1927, presents a majority of new and improved illustrations replacing those in former editions of which the blocks had become worn by much reprinting. Opportunity has also been taken to revise the text and to make alterations and additions without interfering with the general plans and scope of the work. It is interesting to note that in figure 6 the course of the median nerve, listed as an erratum, is in reality the anomalous course of this nerve not infrequently seen. The work is illustrated with thirty-six figures of which the majority are full-page plates on special paper and in colors. This book is an admirable and compact manual of its subject, of extreme value not only to students but to teachers of applied anatomy.

Thérapeutique Médicale. II. Aliments Médicaments. Par Mm. Loefer, M. Labbé, Richet, Legendre, Reynaud, Debray et Boutroux, Alquier, Lecoq, H. Labbé, Leclerc, Feisinger, Marchal, Lesné et Mme. Randoin. Masson & Cie., Paris, 1930, pp. 328. 45f.

The value of foods in the treatment of disease comprises the second section of a work on therapeutics, by a professor of the University of Paris and his collaborators. The chemical composition, the vitamin content, the calories of many foods are described. A greater portion of the book, however, is taken up with the advantages and disadvantages of special foods in nutrition. Meat is given a great deal of consideration; a detailed description is given of bread as it forms a staple article of French food. Separate chapters take up the consumption of vegetables, the use of fruit, sugar and salt therapy, the value of cod liver oil, or irradiated foods. The book is frankly French, but it is up-to-date and gives many new facts about foods. References are not given, the few illustrations are good, and many tables and charts make the subject more readily understood.

BOOKS RECEIVED FOR REVIEW

Thomas Say—Early American Naturalist by Harry B. Weiss and Grace M. Ziegler. Published by Charles C. Thomas. 260 Pages. Price $5.00.

Surgical Emergencies in Practice by W. H. C. Romanis and Philip H. Mitchiner. Published by William Wood and Company. 608 Pages. Price $6.00.

Bioassays—A Handbook of Quantitative Pharmacology by James C. Munch. Published by The Williams and Wilkins Company. 958 Pages. Price $10.00.

Handbook of Diseases of Infants and Children by F. M. B. Allen. Published by William Wood and Company. 595 Pages. Price $5.00.

Études Neurologiques by Georges Guillain and Th. Alajouanine. Fourth Edition. Published by Masson et Cie, Editeurs. 358 Pages. Price 65 fr.

The Practical Medicine Series. General Medicine edited by George H. Weaver, Lawrason Brown, George R. Minot, William B. Castle, William D. Stroud and Ralph C. Brown. Series 1930. Published by The Year Book Publishers. 848 Pages. Price $3.00.

Recent Advances in Haematology by A. Piney. Third Edition. Published by P. Blakiston's Son & Co. Inc. 348 Pages. Price $3.50.

The Clinical Interpretation of Blood Examinations by Robert A. Kilduffe. Published by Lea & Febiger. 629 Pages. Price $6.50.

Treatment of Epilepsy by Fritz B. Talbot. Published by The Macmillan Company. 308 Pages. Price $4.00.

Infant Feeding in General Practice by J. V. C. Braithwaite. Published by William Wood & Company. 140 Pages. Price $1.75.

Ante-Natal Care by W. F. T. Haultain and E. Chalmers Fahmy. Second Edition. Published by William Wood & Company. 127 Pages. Price $2.25.

Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of House Surgeons and Surgical Dressers. Edited by H. W. Carson. Tenth Edition. Published by William Wood & Co. 641 Pages. Price $7.00.

Clinical Allergy Particularly Asthma and Hay Fever—Mechanism and Treatment by Francis M. Rackemann. Published by The Macmillan Company. 617 Pages. Price $10.50.